THE IRON TRADE REVIEW

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RAILROAD ACTIVITY

INCREASES THE ORDERS OF MANY INDUSTRIES

Large Production of Pig Iron—Eastern Furnaces Using Local and Foreign Ores—Strike Situation Serious.

Labor troubles continue to form the only dark cloud in an otherwise clear sky of prosperity. The fight against the open shop policy of the American Sheet & Tin Plate Co. is being carried on with determination. The company has obtained non-union workmen for some of its plants, and its operations are at about 40 per cent of total capacity in the tin plate plants, and at more than 70 per cent of its sheet capacity. Most of the independent companies have signed with the Amalgamated scale and are operating in full. The most noteworthy exception is the Youngstown Sheet & Tube Co., which is, however, continuing its new construction program. The sheet business of the principal producer during the past 45 days has been equal to the full capacity of its active mills. June specifications of the bar department of the Carnegie Steel Co. made it the heaviest month in tonnage in three years, and orders this month are running in excess of June. The total orders in finished lines of one of the leading independent interests so far this month show an increase of 150 per cent over the full month of July, 1908. The announcement that the Jones & Laughlin Steel Co. will become a factor in the wire business is an important development.

Railroad Buying

Increased activity of the railroads is one of the most cheerful signs of the times. The American Locomotive Co. has made a purchase of heavy machine tools, probably involving $500,000, the largest contract since the depression started in 1907. During the past week the Lake Shore railroad placed over 300 idle locomotives in active service. Equipment orders include 2,000 cars for the Chicago & Northwestern to the American Car & Foundry Co., and 60 locomotives for three railroads to the American Locomotive Co. A number of orders of good size have been placed for structural material, by different railroad interests, and there is an increasing demand for bar iron.

Iron Ore Conditions

The disposition which has been shown in a very marked degree by eastern furnaces to obtain their ore supplies outside of the Lake Superior region is interesting, especially in connection with the prospect of ore being placed on the free list of the new tariff law. Very little lake ore has been purchased by eastern furnaces, and the demand at the present time on ore mines in the eastern part of the country is so great that it is being met with difficulty by the mining companies. Late in 1908, sales of foreign ore to American producers aggregated 600,000 tons, of which 300,000 tons came from Spain; 200,000 tons came from Newfoundland, and about 100,000 from lower Russia. Since that time, two eastern producers have taken about 125,000 tons of high grade Swedish ore, and there has been some selling of the Cuban product aside from that imported by two steel works interested in the deposits in that island. Representatives of the Spanish firm which made the sales of last year are now in this country negotiating for 1910 shipments. If ore should be put on the free list, the competition of the Cuban and other foreign ores would be more keenly felt by the Lake Superior interests.

The Coke Merger

The promoters of the proposed coke merger of independent ovens in the Connellsville region have made a new proposition to the plant owners, which is a modification of the plan of payment originally understood. It provides a certain percentage of cash and of common and preferred stock in the new company. A number of companies have also been asked to materially reduce their option figures to an adjusted price, which is based upon the values fixed by the appraisement recently taken by the promotors The improved industrial outlook is making some plant owners reluctant to accept the modified terms of settlement or to reduce their original option prices, so that it is likely that some of these interests will not agree to be parties to the combination. The promoters of the merger are still confident in their declaration that a combination will result, although this will not be as extensive as first contemplated.

Extensions at Lorain

It is understood that the United States Steel Corporation has plans for rather extensive enlargement of the works of the National Tube Co., at Lorain, but no definite announcement is made except that the Corporation has authorized the construction of a new skelp mill and two butt-welding plants at Lorain.

Pig Iron

Persistent rumors have been in circulation that the Steel Corporation is about to purchase 100,000 tons of Bessemer pig iron, and that the price would be $16 valley, but the report can not be officially confirmed, and there is no reason to believe that the Corporation will enter the market for iron at any time in the near future. The Corporation has ordered in Isabella furnace No. 1, and about Aug. 1 will probably start No. 5 at Gary, Ind., where 14 open-hearth furnaces are now in operation, and a second unit of the same size is ready to be fired. The Tennessee company has blown out one of its furnaces at Bessemer, and

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THE WEEK IN IRON CENTERS

PITTSBURG.

Heavy Movement of Finished Products —Serious Labor Troubles.

Office of THE IRON TRADE REVIEW, 510 Park Building, July 20.

Labor disputes which appear to be spreading are engrossing the serious attention of the iron and steel industry in a situation which otherwise is almost uniformly favorable. The strike of the Amalgamated Association of Iron, Steel & Tin Workers against the American Sheet & Tin Plate Co. has been extended to the finishing departments in the tin plate mills and some plants other than those where the rolling mill employes originally went out have been affected. The sheet mills of the company are little involved and their operations are being gradually increased. The sheet department of the Youngstown Sheet & Tube Co. has been struck by the Amalgamated association for the open shop declaration of the company. Bar iron manufacturers generally are refusing to sign the puddling scales of the Sons of Vulcan, which are 25 cents in advance of those of the Amalgamated association on a 1-cent bar card. The plant of the Pressed Steel Car Co. at McKees Rocks, Pa., is facing a strike condition and serious trouble has resulted. The Republic Iron & Steel Co., having signed the annual boiling and finishing agreement with the Amalgamated association, resumed this week in its different mills, which have been idle since July 1.

The movement of finished lines of iron and steel to consumers is very heavy. The steel car orders of the leading interest which recently have reached the largest total in three years, are running at an increased gait in July. Entries on sheet mill books have maintained a normal daily tonnage for the past six weeks. Comparisons by some large companies of the present month to date with July of one year ago show a gain of about 150 per cent. Leading railroad systems in this district report fully a normal tonnage in steel products is now being handled by them. Especially large shipments of wire products have been made.

Important new construction work has been definitely advanced by the award of contracts in the week. The Jones & Laughlin Steel Co. placed a number of the buildings for its new works at Aliquippa, Pa., including a rod mill and announced its intention to enter the ranks of the makers of wire products, a line of manufacture which it has not followed in the past. The Republic Iron & Steel Co. made the awards for the buildings for the four-furnace tube mill which will be erected by its subsidiary, the Hazelton Steel Tube Co., near Youngstown, O.

Pig Iron.—Recent heavy sales to steel companies have given the market in pig metal a bullish tone with respect to steel making grades. Reports are current of important additional purchases having been made, but these are not confirmed. The general market is firm but there has been some spread in quotations on foundry iron.

In Bessemer no transactions of note have been closed since the purchase by the Youngstown Sheet & Tube Co. of 25,000 tons from the Bessemer Pig Iron Association for last half delivery at $15.50 valley furnace. A number of the makers of this grade in the week raised their quotations to $16 valley, but no sales at this figure are reported. A local foundry is in the market for 500 tons for delivery up to October. Not a great deal of inquiry is current in basic, but a western consumer is out for 3,500 tons. The minimum price for this grade is $15 valley, but some furnaces are quoting more for any extended shipment.

Foundry iron buying is moderate and some uncertainty has arisen from requests for deferred shipments which have come to sellers in the past several weeks, largely from the jobbing foundries. It is apparent that some melters of this class had anticipated in their purchases a more rapid improvement in their business than has taken place. The Pennsylvania railroad this week took quotations on 5,000 tons of low silicon foundry iron and 3,000 tons of No. 2 for last quarter shipment to Altoona. A local machinery interest is closing on 500 tons of Nos. 2 and 3 for last half. The general level on No. 2 foundry is about $15.25 valley, although this price has been shaded in recent sales. A glass interest bought about 1,000 tons of No. 2 for last half at a reported price of $15 valley.

A block of 4,000 tons of gray forge to this district for last half shipment was taken at $14 furnace as well as a lot of 200 tons to an electric company.

Furnace operations in the valleys have been increased by the blowing in of the Sharpsville stack. The McKeefrey furnace will go in about Sept. 1, after a prolonged idleness.

Sales of southern gray forge to northern cast iron pipe interests are reported at $11.50 Birmingham. The Republic Iron & Steel Co. has blown out one of its Pioneer furnaces for repairs.

On prompt and third quarter shipment on northern iron, we quote as follows:

Bessemer, valley	$15.50 to 15.75
Bessemer, Pittsburg	16.40 to 16.65
No. 2 foundry, Pittsburg	16.00 to 16.40
Gray forge, Pittsburg	14.90 to 15.15
Basic, valley	15.00 to 15.25
Basic, Pittsburg	15.90 to 16.15

Ferro-Alloys.—A number of the large steel interests have been actively buying ferro-manganese during the past month and these consumers are now well covered on their forward requirements. During the week, a Youngstown interest closed on about 300 tons of prompt material at $41.50 seaboard and 1,500 tons for first half at from $42 to $42.50 seaboard at present duty. Other steel companies are negotiating. There is moderate buying in ferro-silicon. We quote ferro-manganese at from $41.50 to $42 Baltimore at present duty on prompt material, or for delivery this year and on first half shipment at from $42.50 to $43.50 Baltimore. The freight rate from Baltimore to Pittsburg is $1.95.

Fifty per cent ferro-silicon is quoted at $61.50 to $62.50 Pittsburg on forward deliveries, at present duty; domestic, 12 per cent, $25; 11 per cent, $24; 10 per cent, $23 Pittsburg.

Plates.—One of the large independent interests the past week began to quote 1.45c mill on some plate business and expects the market to shortly advance to this level. This company's general quotation is 1.40c mill, but it is making the price only on highly desirable business. Other leading independents are also holding plates at 1.40c mill, but the Carnegie Steel Co. is quoting a minimum of 1.35c Pittsburg. A heavy tonnage is being regularly entered and the mills are running full. The Baltimore & Ohio railroad inquiry for about 5,000 cars appears to be the most active in the market and it is expected that the award among the different car builders will be made soon. We quote the present market as follows:

Tank plates, ¼-inch thick, 6¼ to 100 inches 1.35 to 1.45c mill. Extras are as follows per 100 pounds: Boiler and flange steel plate, 0.10c; A. B. M. A. and ordinary firebox steel plates,

0.20c; still bottom steel, 0.30c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches, excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end not being less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½-inch to and including 3/16-inch plate on thin edges, 0.10c; under 3/16 to and including No. 9, 0.25c. Five cents extra for less than carloads. Terms, net cash in 30 days.

Sheets.—The usual midsummer dullness in sheets has not made its appearance and the market continues active. The daily mill orders entered by the leading interest during the past six weeks have been fully equal to the normal output of its serviceable mills. The American Sheet & Tin Plate Co. is gradually increasing its operations in its non-union plants. This week it put on additional mills at its Saltsburg and Struthers works, which had been idle for many months, and is now running more than 70 per cent of its sheet capacity. The strike of the Amalgamated Association against the Youngstown Sheet & Tube Co., begun this week, has interrupted the sheet-making activity of that principal independent. The independent mills generally having signed the scale, are operating in full. Sheet prices are firmer except in some western districts. We quote present regular prices as follows:

Blue annealed sheets, Nos. 10 and heavier, 1.60c; Nos. 11 and 12, 1.65c; Nos. 13 and 14, 1.70c; Nos. 15 and 16, 1.80c; box annealed sheets, Nos. 10 to 12, 1.85c; Nos. 13 and 14, 1.90c; Nos. 15 and 16, 1.95c; Nos. 17 to 21, 2c; Nos. 22 to 24, 2.05c; Nos. 25 and 26, 2.10c; No. 27, 2.15c; No. 28, 2.20c; No. 29, 2.25c; No. 30, 2.35c; galvanized sheets, Nos. 13 and 14, 2.25c; Nos. 15 and 16, 2.40c; Nos. 17 to 21, 2.50c; Nos. 22 to 24, 2.65c; Nos. 25 and 26 2.85c; No. 27, 3.05c; No. 28, 3.25c; No. 29, 3.40c; No. 30, 3.65c; painted roofing sheets, $1.55 per square for No. 28 gage, 2½-inch corrugation, and galvanized roofing sheets, $2.80 per square for No. 28 gage, 2½-inch corrugation.

Tin Plate.—The strike of the tinning workmen the past week has made the movement of the men against the open shop order of the American Sheet & Tin Plate Co. of somewhat more extensive proportions. The finishers have gone out in some plants in which the Amalgamated Association has no organization of the rolling mill employes, notably at the Chester, Pa., and New Kensington, Pa., works, but in some other mills where the tin house union had locals, the strike order has not been observed. In some of the operating non-union plants, the hot mill men are being induced to join fortunes with the Amalgamated association and the strike is now more general than when first inaugurated. The company has been manning some of its union plants with non-union forces and has operated some mills at its American works at Elwood, Ind, and at its Greer and Shenango plants at New Castle, Pa. The operations of the company are at about 40 per cent of total capacity. Some large consumers of tin plate, particularly meat packers, have placed heavy orders, and there has been additional buying by fruit and vegetable canners, some of which has been stimulated by fear of a prolonged strike. Shipments are quite active. Tin plate prices are regular and we quote the present market as follows:

Coke tin plate, 100-pound basis, 14 x 20, $3.45 f. o. b. mill Pittsburg district and $3.40 in large lots. Terms 30 days less 2 per cent for cash in 10 days.

Rails and Track Material.—The standard rail mills at the Edgar Thomson works of the Carnegie Steel Co. are running at about 75 per cent of normal at the present time. The light rail mills have been operating full. Prices in light rails continue stronger and some sales are being made at better than the quoted schedule. The Carnegie Steel Co. last week booked about 2,000 tons. In splice bars, the Chesapeake & Ohio, Baltimore & Ohio and Central of New Jersey railroads closed the past week for large lots for track improvement. Prompt delivery is specified. Spike prices are more uniform. We quote the market on Bessemer rails as follows, the price on open-hearth rails being $30 mill:

Fifty-pound and heavier, 500-ton and over, $28; carloads and less than 500 tons, $30; less than carload lots, $32; light rails, 8-pound, $30; 12-pound, $29; 16 to 25-pound, $28; 30 to 35-pound, $27.75; 40 to 45-pound, $27; angle splice bars for standard sections, 1.50c Pittsburg; standard spikes, 1.65c to 1.70c Pittsburg; hand spikes, 1.60c to 1.70c Pittsburg.

Steel.—Bessemer billets have undergone a rather sharp advance in the past 10 days and the nominal general price of $23 mill on either Bessemer or open-hearth billets has disappeared. Open-hearth material has been above this level for a number of weeks. Makers of Bessemer steel are now asking from $24 to $25 mill and some are declining any additional orders because of their own heavy requirements and those of their patrons under contract. Quotations made this week on open-hearth billets, base sizes, were $25 Pittsburg. One company rejected a heavy tonnage of forging billets without quoting. Sheet bars are quoted at $25 mill. The principal steel makers have abandoned the plan of absorbing half the freight on shipments within certain limits, which has been in force through a greater part of the depression.

Bessemer 4 x 4 billets with 0.25 carbon and less are regularly quoted at $24 to $25 Pittsburg, with the usual extras for size and analysis, and open-hearth rolling billets from $24 to $25 Pittsburg. Forging billets are held at $27 Pittsburg. The regular quotation on sheet and tin bars is $25 Pittsburg.

Hoops and Bands.—The dull season at hand for the distilling and large cooperage trade is making hoop buying light by the principal consumers. Miscellaneous users are, however, ordering well. Hoop prices are somewhat irregular. Bands are now quoted at 1.25c Pittsburg. We quote the present market as follows:

Hoops in carload lots, 1.40c to 1.50c; in less than carload lots, 1.60c; bands, 1.25c, base half extras as per standard steel.

Merchant Bars.—Bar iron makers in this territory have again advanced their prices and are now quoting at 1.45c Pittsburg mill or 1.50c Youngstown. The western market is, however, still quotable at about 1.35c Chicago. The market shows considerable sentimental improvement and some orders are being booked at the higher quotations. Steel bar specifications continue extremely heavy and although the June total for some large makers was the heaviest in three years, mill orders entered so far in July have surpassed this tonnage. Consumers are insistent in offering new business, but the mills are acting more independently in the acceptance of additional contracts. The minimum of the market continues 1.25c Pittsburg although a number of the mills are asking 1.30c. Shafting orders have been taken at the regular discounts, which is an improvement in this market. Following the signing of its wage agreement with the Amalgamated association, the Republic Iron & Steel Co. this week started its different plants and now has all its active capacity in

operation again. We quote the present market as follows:

Common iron bars, 1.45c to 1.50c, Pittsburg; Bessemer and open-hearth steel bars 1.25c to 1.30c; plow and cultivator, 1.25c to 1.30c; channels, angles, zees, tees, under 3-inch, 1.35c, all f. o. b. mill. The following differentials are maintained on steel: Less than 2,000 pounds, 0.10c advance; less than 1,000 pounds of a size, 0.30c advance. Cold rolled and ground shafting, 60 per cent in carloads, and 55 per cent in less than carloads, delivered in base territory. Planished and machine straightened tire is 1.40c base; iron finished tire under 1½ by 1½ inches, 1.35c, both plus ½ extra on tire card; iron finished tire, 1½ x ½ and over, 1.20c, plus ½ extra on the steel bar card.

On cold rolled strip steel, width 1½ inches and wider, and 0.100 inch and thicker, we quote base prices for 100 pounds, $3.05 on hard, and $3.30 on soft.

Structural Material.—Recent lettings have failed to show any apparent improvement in fabricating prices despite the well filled condition of many shops and the advancing market in plain material. Some companies have discounted any betterment in conditions for some time ahead by engaging their outputs at current low prices. Present inquiry on new contracts is only fair. The structural shape market ranges from 1.35c to 1.45c mill, one maker having put its asking price on some orders to the higher figure this week. Interest in the structural situation this week centered in the award to the Fort Pitt Bridge Works for a number of the mill buildings for the new steel plant of the Jones & Laughlin Steel Co. at Aliquippa, Pa., which will require from 8,000 to 10,000 tons. Among the structures which the Fort Pitt Bridge Works will fabricate and erect are those for the open-hearth department, soaking pits, blooming mill, rod mill and billet mill. The plain material for this work will be furnished from the South Side plant of the Jones & Laughlin Steel Co. The Republic Iron & Steel Co. also placed the contract with the McClintic-Marshall Construction Co. for the buildings of its new tube works to be erected at Hazelton near Youngstown, O. This work will require about 1,500 tons and the steel will be supplied by the Carnegie Steel Co. The American Bridge Co. has taken a railroad bridge for the Consolidated Coal Co., at Paintesville, Ky., 500 tons, and the Jones & Laughlin Steel Co. has the award for from 500 to 600 tons for a new apartment building for the Rockford Realty Co., New York City. Bids have gone in on several buildings for the county home of Allegheny county, which will require about 215 tons. We quote the present market on structural shapes as follows:

Beams and channels, 15-inch and under, 1.35c to 1.45c; over 15 inches, 1.45c to 1.55c; zees, 1.35c to 1.45c; tees, 1.35c to 1.45c; angles, from 3 to 6 inches, 1.35c to 1.45c; over 6 inches, 1.45c to 1.55c; universal and sheared plates, 6¼ inches wide and wider, 1.35c to 1.45c.

Merchant Pipe.—Some of the jobbers have beeen sounding the pipe market with a view of taking on speculative tonnage, which the mills have set about to discourage. Specifications offered have been closely considered and in many cases scaled down to what the makers regard as reasonable needs. The mills are not inclined to sell tonnages for extended shipment at today's prices, but will accept actual specifications for deliveries running into August. Makers are well sold up on some sizes of steel pipe and are practically out of the market. Several large industrial companies in this district have just placed their requirements for merchant pipe covering the last six months of the year. Quotations on merchant pipe are firm. We quote the following official discounts on merchant pipe subject to an additional one point and five off to jobbers:

	—Steel—		—Iron—	
	Black.	Galv.	Black.	Galv.
⅛ and ¼ inch.....	72	56	67	..
⅜ inch	73	59	68	54
½ inch	76	64	71	59
¾ to 6 inch	80	70	75	65
7 to 12 inch	75	60	70	53
PLUGGED AND REAMED.				
1 to 4 inch	78	68	73	63
EXTRA STRONG PLAIN ENDS.				
⅛ to ⅜ inch.....	65	53	60	48
½ to 4 inch.....	72	60	57	55
4½ to 8 inch.....	68	56	63	51
DOUBLE EXTRA STRONG PLAIN ENDS.				
½ to 8 inch.....	61	50	56	45

Boiler Tubes.—No buying movement of note has yet begun in the boiler tube market and makers are taking only a moderate run of orders. Prices show no greater firmness. We quote the following official discounts on lap-welded steel boiler tubes to jobbers in carloads:

1 to 1½ inch.....	50
1¾ to 2¼ inch.....	62
2½ inch	64
2¾ to 5 inch.....	70
6 to 13 inch	62

2½ inch and smaller, over 18 feet, 10 per cent net extra.

2¾ inch and larger, over 22 feet, 10 per cent net extra.

To destinations east of the Mississippi river will be sold at delivered discount for carloads lowered by two points, for lengths 22 feet and under; longer lenghts, f. o. b. Pittsburg.

We quote the following official discounts on charcoal iron tubes to jobbers:

1 to 1½ inch.....	45
1¾ to 2¼ inch.....	45
2½ inch	50
2¾ to 5 inch	57
6 to 13 inch.....	45

Wire Products.—The award of contracts the past week and the announcement that the Jones & Laughlin Steel Co. will be a maker of wire products at its Aliquippa works carry with them considerable significance, as this company at present is not a maker of this material. Jobbers and the manufacturing trade are contracting freely in nails and wire. The mills are accepting orders for shipment up to Sept. 1 only at today's prices, and contracts beyond that date by the manufacturing trade carry at $2 advance. There is a general expectation of advanced prices in wire products in the near future. The movement of barb wire and nails to the farming communities is not so active, which is usual at this season. Wire prices are firm and we qoute the present market as follows:

Wire nails, jobbers' carload lots, $1.70; retailers' carload lots, $1.75; painted barb wire, jobbers' carload lots, $1.70; retailers' carload lots, $1.75, with 30c for galvanizing; plain wire to jobbers in carloads, $1.50, and to retailers in carloads, $1.55; polished staples, $1.70; galvanizing staples, $2.

Wire Rods.—There is little new business being done in rods, as consumers are covered. We quote present prices at $29 Pittsburg on Bessemer and $30 Pittsburg on open-hearth rods.

Coke.—The Algoma Steel Co. has opened negotiations for its annual requirements of furnace coke for the year beginning Oct. 1 which will be about 15,000 tons or more monthly or a total of 180,000 to 200,000 tons. It is very likely that this coke will come from the West Virginia regions which have recently been supplying the needs of this company. While some companies have made sales of furnace coke at higher prices and are more optimistic about the market's outlook, offerings are still quite free and sales continue to be made at the quoted prices. Three small transactions aggregating about 8,000 tons monthly and for shipment from September to January were made this week at from $1.70 to $1.75 ovens. Spot furnace coke has also been offered at low prices. In foundry coke more business has been taken about $2.25 ovens for extended shipment, but bargain prices around $2 ovens have been made to cover the remainder of the year. The condition

of a scarcity of labor still continues in some sections of the Connellsville region and in other districts. We quote spot furnace coke at from $1.50 to $1.60 ovens and on contract from $1.60 to $1.75 ovens according to grade. On first class Connellsville foundry coke, the range is from $1.80 to $2 ovens for prompt shipment and on contract from $2 to $2.25 ovens. The *Courier's* figures for the week ending July 10 show 29,683 ovens active with an output of 290,467 tons, compared with 28,777 active ovens and a production of 324,181 tons the previous week.

Old Material.—The mills are picking up in a quiet way offerings of open-hearth stock at prices satisfactory to themselves, but are not giving the market the appearance of much activity. Prices are firm as accumulations are generally strongly held and any large offerings are usually with the purpose of sounding the wishes of the mills as to buying. Some speculative tonnage is being bought by dealers as a higher market is anticipated. Considerable of the Pennsylvania railroad list which was closed the past week, is believed to have gone to this class of buyers. The foundries are taking on more scrap but the iron mills are not active in the market. We quote gross tons delivered in the Pittsburg district as follows:

Heavy melting scrap, $15.50 to $16; re-rolling rails, $16 to $16.50; bundled sheet scrap, $13.75 to $14.25; iron axles, $23 to $24; old iron rails, $18.50 to $19; No. 1 wrought scrap, $15.75 to $16.25; old car wheels, $15.50 to $16; low phosphorus, $19 to $20; machine shop turnings $11.25 to $11.75; cast borings, $9.25 to $9.75; No. 1 cast scrap, $15 to $15.50; malleable, $15 to $15.50; stove plate, $11.50 to $12.

CHICAGO.

Prices of Plates, Shapes and Bars Advanced—Scarcity of Billets.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, July 20.

In its main characteristics, the local market is without change. There is a steady volume of specifications, and new tonnage for prompt shipment is correspondingly good. Neither mills nor furnaces are concerning themselves much in the matter of new business. There are ample assurances of the continuance of present conditions, and inasmuch as all the local mills are in receipt of specifications for bars, plates, shapes and sheets in excess of their output, they are content for the summer months to let the market move of its own momentum. That this is not a slow progress is indicated by a further advance of $1 a ton announced by a local mill, making the price on steel bars 1.48c Chicago, and on plates and structurals 1.58c Chicago. The scarcity of billets is becoming stringent in this territory. The Milwaukee plant of the Steel Corporation is unable to operate at its full capacity because of this condition and many inquiries from fabricating concerns are declined consideration for the same reason. Work on the billet mill at Gary is being rapidly pushed and it is expected to have the plant in operation within a couple of months. Contracts for about 15,000 tons of fabricated steel were closed in the west last week. There is also an exceptionally good volume of small orders, and specifications against contracts from railroads and other interests are above the ordinary routine. Competition continues close, however. The Chicago & Northwestern has ordered 2,000 cars from the American Car & Foundry Co., and 80 locomotives from the American Locomotive Co. The Rock Island and St. Louis & San Francisco also have ordered 15 locomotives each for delivery this year.

Pig Iron.—Some very fair orders have been placed with furnaces this week. A Michigan stove maker bought in the neighborhood of 3,500 tons, divided between northern and southern furnaces, and including 600 tons of 4 per cent to 6 per cent silvery, and there were several purchases of malleable iron averaging around 1,000 tons apiece. But interest centers largely in the multitude of small orders. These average 300 to 500 tons, and aggregate a round tonnage. Their persistence and volume have greatly strengthened the market. No further changes in prices have occurred, and Southern No. 2 rests at $12.50 Birmingham for the third quarter, and $13 for the last quarter. Northern iron is still quoted at $16.50 local furnace for No. 2 foundry, and is very stiff at this price. There continues to be felt a good demand for low grade irons, and gray forge is now held at $11.25 to $11.50 Birmingham. The Bay View furnace of the Illinois Steel Co. is again in the market, accepting business for the last quarter on the basis of $17 Chicago for No. 2. The International Harvester Co. will blow out one of its furnaces for relining at the end of this month, which may account for its recent purchase of basic iron. The total purchases of the American Radiator Co. made earlier this month amount to 40,000 tons. Of this, 7,500 tons was placed with southern furnaces; the balance was divided between Ohio, valley and New York stacks. The company states it is now covered for all the iron it needs in 1909. We quote, Chicago delivery, as follows:

Lake Superior charcoal	$19.50 to 20.00
Northern foundry No. 1	17.50
Northern foundry No. 2	17.00
Northern foundry No. 3	16.50
Southern foundry No. 1	17.35 to 17.85
Southern foundry No. 2	16.85 to 17.35
Southern foundry No. 3	16.35 to 16.60
Southern foundry No. 4	15.85 to 16.10
Southern No. 1 soft	17.35 to 17.85
Southern No. 2 soft	16.85 to 17.35
Southern gray forge	15.60 to 15.85
Southern mottled	15.35 to 15.60
Southern silveries, 4 per cent silicon	17.35 to 17.85
Southern silveries, 5 per cent silicon	17.85 to 18.35
Southern silveries, 6 per cent silicon	18.85 to 19.85
Jackson Co. silveries, 6 per cent.	19.90
Jackson Co. silveries, 8 per cent.	20.90
Jackson Co. silveries, 10 per cent	21.90
Malleable Bessemer	17.00
Standard Bessemer	17.65 to 17.90
Alabama basic	16.85 to 17.35

Billets.—There is more active inquiry for billets, but it is difficult to secure deliveries because of the acute steel shortage all the local mills are feeling. Some have withdrawn from the market. Several inquiries for 500 tons and thereabouts were before the trade this week, but only regular customers are being taken care of. We quote Chicago delivery, forging billets, $28 base; rolling billets, $26.50 to $27. Wire rods are quoted f. o. b. Pittsburg, Bessemer, $27; open-hearth, $28; chain rods, $27.

Merchant Bars.—Another advance of $1 a ton on steel bars has been made by local mills. This puts the Chicago price at 1.48c. Bar iron is still held at a minimum of 1.35c, but this price is obtainable only on desirable tonnage and specifications. Routine orders are booked at 1.40c, and it can be only a matter of a week or so before even this price will be the hard and fast minimum. The demand for both iron and steel bars is rapidly expanding and six to eight weeks is about the best delivery mills can give in either product. On some sizes the delivery is later. We quote for Chicago delivery, as follows:

Bar iron, 1.35c to 1.40c; hard steel bars, 1.30c; soft steel bars and bands, 1.48c, half extras; soft steel angles, less than 3 x 3, 1.48c; hoops, 1.78c base, full extras; planished or smooth finished tire steel, 1.58c; iron finish, up to 1½ x ½-inch, 1.53c base tire card; iron finish, 1½ x ½-inch and larger, 1.38c base steel card; channel for solid rubber tire, ¾ to 1 inch, 1.88c, and 1⅛-inch and larger, 1.78c; smooth-finished machinery steel, 1.63c; flat sleigh shoe, 1.43c; concave and convex sleigh shoe, 1.63c; cutter shoe, 2.75c; toe calk steel, 1.93c; railway spring steel, 1.78c, base vehicle

card; crucible, 1.73c, base steel card; vehicle spring tool steel, 7c to 9c, with higher prices asked on special grades. Quotations on shafting are 60 per cent off the list for carload lots, and 55 per cent off for less than carload lots, carload freight allowed to points in base territory. On iron and steel bars from local stocks, we quote as follows: Bar iron, 1.70c to 1.80c, full extras; soft steel bars, 1.50c per 100 pounds base, plus half extras; soft steel hoops, 2.20c, full extras.

Plates.—Chicago mills are now asking on the basis of 1.58c for deliveries of universal and sheared plates over the remaining months of the year. This is an advance of $2 a ton on these products since the first of the month. There is an excellent volume of business—both in the way of specifications and new tonnage for prompt shipments—and eight to ten weeks is the best that can be done by the leading interest. We quote for Chicago delivery as follows:

Tank plates, ¼-inch thick, 6¼ to 100 inches, 1.58c. For extras see Pittsburg report. Store quotations are without change, as follows:

Tank steel, ¼-inch and heavier, up to 72 inches wide, 1.70c; from 72 inches wide to 96 inches wide, 1.80c; 3/16-inch up to and including 60 inches wide, 1.80c to 1.85c; 72 inches wide, 2.05c to 2.10c; No. 8 up to 60 inches wide, 1.80c to 1.85c. Flange and head quality, 25c extra.

Sheets.—The strength of the market is most noticeable in the almost total elimination of price cutting for southwestern business and especially that for Texas points. Until quite recently jobbers and consumers in this section of the country had no trouble securing tonnage at prices better than those prevailing elsewhere, but business is now so plentiful and mills are so strongly fortified in the way of orders that they are now adhering closely to their schedules. The local plant cannot give deliveries within eight to ten weeks.

For mill prices, see Pittsburg report. Freight to Chicago, 18 cents. We quote store prices at Chicago as follows:

No. 10, 2c to 2.10c; No. 12, 2.05c to 2.15c; No. 14, 2.10c to 2.20c; No. 16, 2.20c to 2.30c; Nos. 18-20, 2.50c to 2.55c; Nos. 22-24, 2.55c to 2.60c; No. 26, 2.60c to 2.65c; No. 27, 2.65c to 2.70c; No. 28, 2.75c to 2.80c; No. 30, 3.05c; galvanized sheets, Nos. 10 to 16, 3c to 3.10c; Nos. 18 and 20, 3.05c to 3.15c; Nos. 22 to 24, 3.20c to 3.25c; No. 26, 3.40c to 3.45c; No. 27, 3.60c to 3.65c; No. 28, 3.80c to 3.90c; No. 30, 4.20c to 4.50c.

Structural Steel.—Chicago mills have followed the lead of several independent eastern plants in advancing their prices to the basis of 1.58c, which is 1.40c Pittsburg. The delivery question is already beginning to loom as a potent factor in securing new business. Specifications are crowding so rapidly on mills that the best shipment now obtainable is two months. There is no dearth of new tonnage, and every indication points to a large consumption in the remaining months of the year. Some very desirable fabricating contracts were let last week. The American Bridge Co. secured a 1,600 ton contract for a warehouse at Texas City, Tex., for the Texas City Transportation Co. It also secured the contract from the Oliver Iron Mining Co. for the concentrator at Coleraine, Minn., 5,320 tons, and for a highway bridge for the same company, 320 tons. The contract for the Brandies theater and office building at Omaha, 1,043 tons, was let to the Paxton-Vierling Iron Works of that city by the Thompson-Starrett Co. The Sanitary district, Chicago, awarded contracts last week for three bridges, 415 tons. The low bidder on the West Railroad avenue bridge was the Fort Pitt Bridge Works, $7,836; on the Lincoln avenue bridge, the low bidder was the Toledo-Massillon Bridge Co., $9,858; and on the Bryn Mawr avenue bridge, the Kenwood Bridge Co. secured the contract for $2,832. The Kenwood Bridge Co. also secured the contract for the erection of the building in Chicago for the Maxwell Briscoe Automobile Co., 211 tons. Caldwell & Drake, Columbus, Ind., who have the contract for the erection of the Douglas county (Neb.) court house, 2,400 tons, have decided to fabricate the material in their own shops. There is in contemplation the erection of a 20-story building in the down-town district of Chicago to be used exclusively for office and display purposes by furniture manufacturers. No bids for this have been received. Thompson-Starrett Co., the general contractors for the Newhouse hotel, Salt Lake City, have let the steel contract, 1,800 tons, to the American Bridge Co. In addition to these contracts, there is more than the ordinary run of small orders from all points in the west, as well as specifications for railroad bridge work against existing contracts. Competition, however, is very close on many jobs.

We quote mill prices for structural shapes, Chicago delivery, as follows:

Beams and channels, 15-inch and under, 1.58c. For extras, see Pittsburg report. Local store prices are as follows:

All angles, 3 inches and larger, including 6 inches, $1.70 per 100 pounds; angles over 6 inches, $1.80 per 100 pounds base; beams, 3 to 15 inches, inclusive, $1.70 per 100 pounds base; channels, 3 inches and larger, $1.70 per 100 pounds base.

Rails and Track Supplies.—Rail inquiries in the main are from the smaller steam roads and traction lines. These aggregate for the week about 10,000 tons. Possibly 6,000 tons will be closed in a few days. The demand for light rails is not so active. Nevertheless, specifications for these and for standard sections are to full mill output. Track supplies also are moving freely, the entire output of mills going into immediate consumption.

See Pittsburg report for prices on standard sections. On light rails, Chicago delivery, we quote as follows:

Light rails, 40 and 45-pound, $26; 30 and 35-pound, $26.75; 16, 20 and 25-pound, $27; 12-pound, $28. In lots of 250 to 500 tons a reduction of 60 cents a ton from these prices is made; lots of 500 tons and up carry a reduction of $1 a ton. Track supplies, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.75c to 1.85c; smaller size spikes, 1.85c to 1.95c base; track bolts, with square nuts, 2.15c to 2.20c; with hexagon nuts, 2.30c to 2.40c.

Merchant Pipe and Boiler Tubes.—Indications are very favorable for a large and active consumption of pipe and tubes this year. Specifications are large, especially from the building trades. Railroad shops are taking material more freely. We quote for lap-welded tubes out of store 65 off, and for charcoal 50 off. For mill discounts see Pittsburg report.

Cast Iron Pipe.—Conspicuous among the jobs to be let within the next few days are Milwaukee for 2,500 tons, and Newport, Ky., 1,500 tons. Both these contracts will be let this week. The United States Cast Iron Pipe & Foundry Co. secured the Springfield, O., contract for 200 tons. Prices are without change as follows: Four-inch water pipe, $27.50; 6 to 14 inches, $26.50; larger sizes, $25.50; gas pipe, $1 a ton higher.

Wire Products.—Jobbers continue to specify heavily for barb wire and nails, on which materials mills continue far behind their specifications. No accumulations of stock have been made at any of the plants of the leading producer; in fact, it is doubtful if they will have overtaken their present orders by the time fall buying commences. No change in prices has yet occurred,

and we quote to jobbers, Chicago delivery, as follows:

Wire nails, carload lots, $1.88; retailers' carload lots, $1.93; retailers, less than carload lots, $2.03; painted barb wire, jobbers' carload lots, $1.88; retailers' carload lots, $1.93, with 30c for galvanizing; plain wire to jobbers in carloads, $1.68; staples, $1.88.

Old Material.—While trading remains quiet, the market is gaining in strength. Realizing the crowded condition of the mills, dealers are not pushing sales actively with the above result. We quote as follows, gross tons, in the first paragraph;

Old car wheels	15.50 to 15.75
Old iron rails	17.00 to 17.25
Rerolling rails (4 ft. and over)	15.25 to 15.75
Old steel rails (2 ft. and under)	15.25 to 15.50
Light section relayers, 45 lbs. and under subject to inspection	21.00 to 23.00
Relaying rails, subject to inspection	22.50 to 23.50
Frogs, switches and guards	14.25 to 14.50
Heavy melting steel	14.00 to 14.25

We quote, net tons, as follows:

No. 1 R. R. wrought	$13.25 to 13.50
No. 2 R. R. wrought	12.25 to 12.50
Arch bars and transoms	16.25 to 16.50
Knucklers, couplers and springs	13.25 to 13.50
Shafting	15.25 to 15.50
Iron car axles	18.00 to 18.25
Steel car axles	17.25 to 17.50
Locomotive tires	14.50 to 14.75
Dealers' forge No. 1	11.00 to 11.25
Pipes and flues	9.75 to 10.00
No. 1 cast, 150 lbs. and less	13.50 to 13.75
No. 1 busheling	10.75 to 11.00
No. 2 busheling	8.00 to 8.25
No. 1 boiler cut	9.00 to 9.50
Boiler punchings	13.25 to 13.50
Cast borings	5.75 to 6.00
Mixed borings, etc	5.75 to 6.00
Machine shop turnings	8.00 to 8.25
Railroad malleable	13.00 to 13.25
Agricultural malleable	11.25 to 11.75
Stove plate and light cast scrap	11.25 to 11.50
Angle bars, splices, etc. (iron)	15.25 to 15.75

CLEVELAND.

Blast Furnace May be Built to Supply Basic for New Steel Plant.

Office of THE IRON TRADE REVIEW, Browning Building, July 20.

Iron Ore.—The movement of ore from the head of the lakes continues heavy, and it is expected that 6,000,000 tons will be shipped this month. The dealers are extremely busy. Sales continue to be made at about the same rate as for some time past.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron.—Owing to the fact that it is expected that some time next year the new steel plant of the Upson Nut Co. will be in operation, merchant furnaces of this district have supposed that as the River furnace of the company would be put on basic pig iron they would have one less competitor in the field. This does not seem, however, to be certain, as it is now hinted by one in a position to know that the Upson Nut Co. may decide to build a second blast furnace to make basic pig iron for the steel plant. The Riverside Foundry Works, which now occupies part of the site which is to be covered by the new steel plant, has been notified to vacate when its lease expires, March 1. Contracts for the new open-hearth steel furnaces and bar mill have not yet been awarded, but it is expected that they will be at a not far distant date, so that as soon as the company can obtain possession of the site now occupied by the foundry, work on the erection of the new plant can proceed rapidly.

While inquiries for pig iron have not been quite so numerous as they were last week, and no important transactions have been recorded, the market is firm and prices are tending upward. Local furnaces are asking $16 for No. 2 foundry, delivered in Cleveland for the remainder of the year, and the quotation for the first half of next year has been advanced from $15.50 to $16. At least one valley furnace interest has withdrawn its quotation of $16 valley for the first half of next year. We quote, delivered in Cleveland, as follows:

No. 1 foundry	$16.25 to 16.50
No. 2 foundry	15.75 to 16.00
No. 3 foundry	15.25 to 15.50
No. 2 southern	16.85
Gray forge	15.15 to 15.50
Bessemer	16.40 to 16.75
Lake Superior charcoal	19.00 to 19.50
Jackson Co. 8 per cent silvery	20.05

Coke.—Some important inquiries for the first half of next year and for the year beginning Oct. 1 are pending, but sellers are still naming higher prices than furnaces are willing to pay. Some furnaces, in withdrawing recent quotations on pig iron, have been influenced by the tendency of coke prices to go to higher levels. We quote spot furnace coke at $1.60 to $1.65 at the ovens, and on contract $1.80 to $1.85. For first class Connellsville foundry coke we quote $1.80 to $2 for spot, and $2 to $2.25 on contract.

Finished Materials.—All indications point to large increases in consumption of nearly all finished products. The business of the Lake Shore railroad has increased so rapidly that 150 idle locomotives in the Collinwood shops have been placed in commission. The demand for bar iron shows marked improvement, owing to the increased demand, especially from the railroads and the nut and bolt interests. One concern within a few days has placed an order for its expected six months' requirements equal to the entire tonnage used during the past year and a half. The Empire rolling mill has resumed and the Union will do so next Monday. Among the contracts which have been placed for structural materials are 350 tons of shapes and 150 tons of reinforcing bars for the normal school to be erected by the National Iron & Wire Co.; 300 tons of shapes for the new Meckes store, to be furnished by the Bourne-Fuller Co., and 350 tons of shapes for the addition of the National Malleable Casting Co., to be erected by the Van Dorn Iron Works. Rivets are now quoted at 1.60c for structural and 1.70c for boiler, Pittsburg, and it is expected that the prices will be advanced. The minimum price on bands is 1.25c Pittsburg.

Old Material.—A general stiffening up of prices took place this week, the increase varying from 50 to 75 cents a ton. Although some material has changed hands, the market is rather slow. We quote f. o. b. Cleveland as follows:

Old iron rails	$17.00 to 17.50
Old steel rails (re-rolling)	15.00 to 15.50
Old steel rails (under 6 feet)	15.00 to 15.50
Old car wheels	15.50 to 16.00
Old steel boiler plate	13.00 to 13.50
Malleable iron (railroad)	14.50 to 15.00
Steel axles	18.50 to 19.00
Malleable iron (agricultural)	13.00 to 13.50
Heavy steel	14.50 to 15.00
Country mixed steel	12.50 to 13.00
Low phosphorus	16.00 to 16.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$14.00 to 14.50
No. 1 busheling	12.00 to 12.50
No. 1 machine cast	12.50 to 13.00
Iron axles	17.50 to 18.00
Axle turnings	10.00 to 10.50
Machine shop turnings	8.75 to 9.25
Grate bars	11.00 to 11.50
Pipes and flues	11.50 to 12.00
Tank iron	10.00 to 10.50
Hoop and band iron	9.00 to 9.50
Sheet iron	8.00 to 8.50
Wrought drilling	8.75 to 9.25
Stove plate	11.00 to 11.50
Cast borings	7.50 to 8.00

CINCINNATI.

Pig Iron Market Firm, but Sales are Not of Large Size.

Office of THE IRON TRADE REVIEW, First National Bank Bldg., July 20.

Pig Iron.—The undertone to the market remains firm and northern iron in southern Ohio shows an advancing tendency. Two of the leading producers in the Ironton district have advanced prices to $15 at furnace for No. 2 foundry and the other interests, it is believed, will follow with a similar advance. It is practically certain, however, that for fourth quarter alone, $15 Ironton is the best that could be done, but for the near-by months $14.50 is still quotable for No. 2 foundry and malleable. Southern iron is quotable at $12.50 Birmingham for No. 2 foun-

dry for prompt shipment and for the remainder of the year or third quarter alone, but for fourth quarter delivery $13 Birmingham is the uniform asking price. A few producers are demanding $13 for any delivery. There were no important tonnages sold in this market during the week and inquiries are for small lots ranging from 100 to 500 tons, but these are not numerous. An Indiana melter is making a firm offer on the basis of $12 Birmingham for 500 tons of foundry iron, but so far as can be learned has been unable to find any agency that will accept the business. Another 500-ton inquiry comes from Detroit. A few sales of 300 to 400 tons have been made on the basis of $12.50 Birmingham. Consumers are taking their iron on third quarter contracts fairly well, especially southern iron; but northern furnaces have still considerable tonnage held up. The melt in this territory is steadily improving and sellers are firm in their views at present quotations. We quote for prompt shipment and third quarter delivery, delivered Cincinnati, based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, as follows:

Southern foundry No. 1	$16.25
Southern foundry No. 2	15.75
Southern foundry No. 3	15.25
Southern foundry No. 4	14.75
Southern No. 1 soft	16.25
Southern No. 2 soft	15.75
Southern gray forge	13.75 to 14.25
Northern No. 1 foundry	16.20 to 16.70
Northern No. 2 foundry	15.70 to 16.20
Northern No. 3 foundry	15.20 to 15.70
Jackson county 6 per cent silicon	18.70
Jackson county 8 per cent silicon	19.70
Jackson county 10 per cent silicon	20.70

Finished Material.—The market remains strong in tone and some of the mills are behind on deliveries. There is a tendency to advance prices on the part of the independent mills and for steel bars. One large interest is resisting the taking of further orders at 1.30c Pittsburg. Specifications on contracts are good and there is a more urgent call from consumers for deliveries. The jobbing business is more active.

Coke.—But little change is to be noted in the situation and the market is steady with ovens showing more independent views in regard to prices. Foundry contracts for the remainder of the year and for the year ending July 1, 1910, are mostly closed. The call for spot coke is moderate and requests for shipments on contracts show but little change. Prices in the leading coke producing districts range as follows, with the inside quotations representing prompt shipment prices, while the extreme quotations reflect the market on contracts:

	Per Ton.
Wise county furnace coke	$1.60 to 1.85
Wise county foundry coke	2.00 to 2.25
Pocahontas furnace coke	1.65 to 1.85
Pocahontas foundry coke	1.75 to 2.25
Standard Connellsville furnace coke	1.60 to 2.00
Standard Connellsville foundry coke	2.00 to 2.25

Old Material.—The market shows but little activity and quotations remain unchanged. We quote dealers' prices here as follows:

Old No. 1 R. R. wrought net tons	$13.50 to 14.00
No. 1 machinery, net tons	13.00 to 13.50
Old iron rails, gross tons	15.00 to 16.00
Old steel rails (re-rolling) gross tons	14.00 to 14.50
Old short lengths, gross tons	13.50 to 14.00
Old iron axles, net tons	17.00 to 17.50
Heavy melting scrap, gross tons	13.00 to 13.50
Stove plate, net tons	10.50 to 11.00
Heavy turnings, net	9.50 to 10.00
Cast borings, net tons	7.50 to 8.00
Car wheels	14.00 to 14.50

The Woodstock Furnace went into blast on July 9, operated by the receivers. Hickman, Williams & Co. were selected as sales agents for the receivers.

PHILADELPHIA.

Heavy Inquiry for Basic and Pipe Making Irons.

July 20.

Pig Iron.—The market continues to gather strength, and current developments all tend to render the position of furnace interests more independent. The heaviest demand is for steel and pipe-making irons, though there is still a steady volume of foundry orders ranging up to 500-ton lots, and the price is firmly established at $16.00 to $16.25, Eastern Pennsylvania furnace for No. 2 X on prompt or fairly early shipment. The Pennsylvania Railroad, which a few weeks ago covered its third quarter iron requirements, has sent out inquiries for the fourth quarter: these include 8,000 tons of coke iron, 1,200 tons of Lake Superior charcoal and perhaps the same tonnage of cold blast charcoal. The total inquiry now pending in this district is probably not far from 60,000 tons, chiefly made up of several large blocks of basic and pipe iron. The latter continues extremely scarce and occasional small lots, which are all that can be obtained, are bringing $15.50, delivered, or higher. Two large users of basic in this territory, which apparently had bought for their last half requirements, have found the increase in business so pronounced that additional blocks of good size will be purchased. On sales of over 15,000 tons reported as closed during the week, the price was $16.00, delivered for the remainder of the year and the market now seems firmly established on that basis. Several interests are behind on shipments and steel works are suffering, particularly as they are now using iron and scrap in a 60 to 40 per cent ratio against just the reverse before scrap became scarce. We quote, last half delivery in Eastern Pennsylvania, as follows:

No. 1X foundry	$17.00 to 17.50
No. 2X foundry	16.50 to 17.00
No. 2 plain	16.00 to 16.50
Standard gray forge	15.50 to 15.75
Basic	16.00
Low phosphorus	19.00 to 20.00
No. 2 Birmingham	15.75 to 16.25
No. 2X Virginia	16.75 to 17.25
No. 2 plain Virginia	16.25 to 16.75

Finished Materials.—Although the structural market has been rather quiet during the past week, evidences of improvement are still plentiful. None of the Eastern Pennsylvania mills is running its steel furnaces under 60 per cent of maximum and three or four of the largest producers are running absolutely full, while deliveries on certain lines are growing slower. With one or two exceptions, sellers into this territory are now holding out for 1.30c, Pittsburg, on bars, and 1.40c on shapes and plates, equivalent to 1.45c and 1.55c, Philadelphia delivery, and bookings are being made at these figures. On old contracts specifications are reported as extremely heavy. Railroad buying continues active and prices are higher on some lines, particularly spikes. Light rails are in good demand, with deliveries more remote. The Boston & Maine rail order, 21,000 tons, was divided among several interests and 5,000 tons each will be rolled by the Pennsylvania Steel Co. and the Maryland Steel Co. The American Bridge Co. has secured the Traders' National Bank at Scranton, 600 tons, on its own design, and an early decision is expected on the Casey Grand hotel in that city. Bids are to be taken again on improvements at the Harrisburg arsenal, involving 400 tons of steel. The Franklin Hotel project in this city, a bank building at Richmond, involving about 600 tons, and a grain elevator also in Richmond promise early developments. The Pennsylvania Steel Co. has received the sub-contract for the Passyunk Avenue bridge, 1,500 tons, from the Stroebel Construction Co. We quote: Plates, 1.45c to 1.55c; structural shapes, 1.45c to 1.55c; sheets, No. 28, 2.80c; refined bar iron, 1.45c to 1.50c; steel bars, 1.45c.

Old Material.—Railway lists for the month brought high prices, over $16.25 being paid for heavy melting steel in some instances, and the average was well in advance of the June list. Mills are offering $16.00 for steel and dealers are asking $16.50, consequently little business is resulting. An eastern plate mill is understood to have purchased the cargo of San Francisco

scrap noted a week ago. We quote, gross tons, Eastern Pennsylvania delivery, as follows:

Old steel rails (rerolling)	$16.75 to 17.25
No. 1 steel scrap	16.00 to 16.50
Old steel axles	21.50 to 22.00
Old iron axles	23.50 to 24.00
Old iron rails	19.00 to 19.50
Old car wheels	15.50 to 16.00
Choice scrap R. R. No. 1 wrought	17.50 to 18.00
No. 1 yard scrap	16.50 to 17.00
Machinery scrap	15.00 to 15.50
Low phosphorus scrap	20.00 to 20.50
Wrought iron pipe	15.50 to 16.00
No. 1 forge fire scrap	14.50 to 15.00
No. 2 forge fire scrap, ordinary	9.50 to 10.00
Wrought turnings	13.00 to 13.50
Axle turnings, heavy	13.00 to 13.50
Cast borings	10.50 to 11.00
Stove plates	12.50 to 13.00

NEW YORK.

Heavy Demand for Ore—Brisk Buying of Basic and Pipe Making Irons.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., July 20.

Iron Ore.—Purchases of Adirondack ore by eastern furnaces during the past two months have aggregated such a tonnage that the mines will have to be worked at maximum capacity during the remainder of the year to make shipments; the moderate price concessions granted in connection with 1909 deliveries have been withdrawn, and no selling for 1910 shipment has been done. A small tonnage of ores mined adjacent to New York has been sold for early delivery at an advance over previous sales. It is interesting to note that representatives of the Spanish interest which sold extensively to eastern furnaces late last year have opened negotiations for next year's business. The import docks of the Reading railroad at Philadelphia have become badly congested because of heavy arrivals of Cuban, Spanish and other foreign ores, and incoming vessels are experiencing considerable delay in securing berths for unloading. Ocean freights are slightly lower.

Pig Iron.—The market shows surprising hot weather activity. The past week has shown a continuance of the brisk buying movement, as a result of which prices have advanced sharply on basic and pipe-making irons. The range of foundry is spreading, as certain eastern Pennsylvania interests have advanced to a $16.50, furnace, basis for No. 2X, while others are still holding at $16; a large number of moderate sized orders is developing, though current transactions in foundry grades contain no important lots. The basic situation is extremely strong. Aside from sales of two lots aggregating 16,000 tons in the Philadelphia district, a local agency has sold one lot of 15,000 tons and another of 10,000 tons, both for fairly early shipment, a price of $15.75 being mentioned in this connection. Several eastern Pennsylvania steel works are still in need of considerable iron to cover the balance of the year's requirements, and $16, delivered, is now the absolute minimum. Three or four of the largest cast iron pipe interests have purchased moderate tonnages during the week and the price has now advanced to $15.75 to $16, delivered. One of these transactions, running into next year, involved somewhat higher figures. A good sized block of No. 4 southern foundry was snapped up at $11.50, furnace. There is still some selling of Virginia product at below $14, as low as $13.50 still being reported on certain grades. Similarly, prices on Buffalo irons selling into New England territory have been slow to advance and the $15 basis has been shaded on some recent business. Several large lots have been placed in this territory within the past few days. Current inquiries through the east include fully 5,000 tons of charcoal iron, in which connection it is interesting to note that the cold blast output for next year has already been practically disposed of. We quote, New York delivery, for the remainder of the year, as follows:

Northern foundry No. 1	$17.25 to 17.75
No. 2X foundry	16.75 to 17.25
No. 2 plain	16.25 to 16.50
No. 2 southern foundry	16.75 to 17.25
Malleable	17.25 to 17.75
Gray forge	15.75 to 16.25

Ferro-Alloys.—Aside from one lot of good size placed by a local interest for western shipment, there has been little activity in ferro-manganese during the last week and prices continue to $42 to $43, seaboard. Ferro-silicon is stronger, the range being $63 to $67, Pittsburg, according to delivery.

Finished Materials.—New bookings show a considerable decrease from the volume prevailing during July, although the American Bridge Co. booked about 28,000 tons during the first half of this month. Specifications are being received at such a rate that mills are having considerable difficulty in turning out sufficient steel for the finishing works; deliveries are becoming more remote and this, coupled with the quite general advance in shapes, plates and bars and the premiums secured on the billet business, has had the effect of decreasing the purchases to a considerable extent. Structural bookings include a loft building in this city, 500 tons, taken by Levering & Garrigues; a warehouse on Greenwich street, 400 tons, by a local fabricator; a weave mill at Fitchburg, 500 tons, to the Eastern Bridge & Structural Co. and about 400 tons of bridges in the Chicago sanitary district taken by three independent shops. The Douglas county court house at Omaha will require 2,300 tons of steel, which the contractors announce they will fabricate themselves. The Lackawanna Steel Co. is reported to have taken 1,000 tons for a wharf shed at Boston.

The bulk of current lettings is for railroad purposes. The American Bridge Co. has booked 1,800 tons for the St. Louis & Southwestern and will probably secure about 1,500 tons from the Texas Transportation Co. Plans are being prepared for western shops of the Burlington, which will require 2,000 tons of steel and the Copper river road in Alaska will shortly be in the market for 5,000 tons of bridges. The Phoenix Bridge Co. has taken the Lehigh Valley viaduct, 2,000 tons, bids are in on an 800-ton union station at Tacoma, the Pennsylvania Lines west have considerable work in prospect at Columbus and elsewhere and several roads have small bridge orders now pending. The Galveston drawbridge for the Atchison, 700 tons, went to the Penn Bridge Co. Two small sales of girder rails aggregating 500 tons are reported and local lines are in the market for about 1,000 tons. The Merchants Dispatch, a New York Central interest, is in the market for 2,000 steel under frames each weighing 4½ tons, on which quick shipment is desired. The Erie, Ontario & Western and the Delaware & Hudson will all have to purchase a considerable number, in the case of the D. & H. about 5,000, aggregating 20,000 tons.

Two billet inquiries, one of 5,000 tons for the American Iron & Steel Mfg. Co. and another of 4,000 tons for the Carpenter Steel Co., have been in circulation during the week. The demand for billets and slabs continues heavy, the call from hardware interests being particularly brisk. We quote:

Angles, 3 to 6 inches x ¼-inch and heavier, 1.51c to 1.56c; beams, 3 to 15 inches, 1.51c to 1.56c; tees, 3 x ¼-inch and heavier, 1.51c to 1.56c; plates, carloads, tank, 1.51c to 1.56c; marine boiler 1.86c; bar iron, 1.40c to 1.45c; soft steel bars, 1.46c; sheets, No. 28, black, 2.56c.

Cast Iron Pipe.—Public lettings in immediate prospect are at Lisbon Falls, Me., which will award contracts July 22 for 700 tons of 6 to

12-inch, and East Douglas, Mass., which will close July 24 on 600 tons of 6 to 10-inch. Seneca Falls, N. Y., has voted bonds for a municipal water plant involving about 2,000 tons of pipe, but the project may be delayed by litigation. Pipe prices remain low, but show a tendency upward, particularly as recent purchases of iron for pipe purposes have been at higher prices.

Old Material.—The market is without change, and no sales of importance are to be noted. We quote, gross tons, New York delivery, as follows:

Old steel rails (rerolling)	$13.50 to 14.50
Relaying rails	19.00 to 19.50
Old car wheels	14.50 to 15.00
Old iron car axles	20.00 to 20.50
Old steel car axles	18.00 to 18.50
Heavy melting steel	13.00 to 13.50
No. 1 railroad wrought	15.00 to 15.50
Iron track scrap	13.00 to 13.50
Wrought pipe	12.00 to 12.50
Cast borings	7.50 to 8.00
Wrought turnings	9.00 to 9.50
Heavy cast scrap	12.50 to 13.00
Railroad malleable	11.50 to 12.00
Stove plate	10.00 to 10.50
Grate bars	10.00 to 10.50

BUFFALO, N. Y.

Inquiry for Pig Iron Fair—Sales are Not Numerous.

Office of THE IRON TRADE REVIEW,
932 Ellicott Sq., July 20.

Pig Iron.—The quiet of last week continues and probably will through the remainder of the week. The selling of the past two weeks has been less than observed for a like period in several months. Inquiry is fair for both prompt and forward delivery. There is still indication of a stronger tone but prices have not been changed, a minimum on No. 2X foundry is being quoted at $15 f. o. b. Buffalo. In rare instances special lots have been placed at a price somewhat in advance of this. Some large interests are in the market for prices on forward delivery tonnage. The Whitin Machine Co., of Whitinsville, Mass., has been asking for prices on 6,000 tons, forward delivery. The production of this district has been increased by another blast furnace, which was blown in recently by the New York State Steel Co., of this city. This furnace has a capacity of 450 tons a day. The estimated difference between the prices on prompt and forward iron is about 50c at this time, but consumers show some interest in deliveries during the next few months. We quote f. o. b. Buffalo, as follows:

No. 1X foundry	$15.50 to 16.00
No. 2X foundry	15.00 to 15.75
No. 2 plain	14.75 to 15.25
No. 3X foundry	14.50 to 15.00
Malleable Bessemer	15.25 to 15.75
Gray forge	14.50 to 15.00
Charcoal	19.50 to 20.50

Finished Products.—Owing to the inability of certain selling interests to take on more business at the present time, the booking of orders is running very light. Specifications for new building contracts are dull, and in Buffalo there is very little building under consideration now which would interest the manufacturer of structural steel. Probably the most important inquiry in this market this week is from an extensive wagon manufacturer desiring 1,000 to 1,200 tons of bars for delivery during remainder of the year. At least one of the leading producers was unable to quote prices on this order owing to the great amount of business on its books and a policy adopted to take care of old customers and current business. One letting expected to take place this week is that of the American Radiator Co., which will use 100 tons for its new laboratory. One independent interest reports having booked more business during the months of April, May, June and July than during any like period since the depression of two years ago. This business came so rapidly as to make it impossible for the mills to fill all the orders, and this condition seems to be general with the steel interests of this district, and while it is quiet here at this particular time, so far as new offerings of tonnage are concerned, there are indications of extensive business arriving by September, which will scarcely find the mills clear of the business now on hand. An interesting contract is now before the mayor of Buffalo awaiting his action in the matter of an order given by the common council to the Holly Mfg. Co., for two new 30,000,000-gallon steam pumps for use at the new waterworks. The two pumps will cost $229,700. The Holly company was the lowest bidder for this contract. Reports indicate activity along the Canadian frontier, where announcement is made that the Canadian Northern Railway Co. is expected to build a new line from Bridgeburg, Ont., which is opposite Buffalo on the Niagara river, to Ottawa, Ont. It is stated that $4,000,000 will be spent in this enterprise. Little is known of the route of this railroad, but it is supposed that the line will pass north of Toronto.

ST. LOUIS.

Pig Iron Strong—Important Contracts for Structural Material Pending.

July 19.

Pig Iron.—While not as active as it is in the east, the pig iron market in the St. Louis territory is decidedly strong with a minimum price of $12.50 quoted for No. 2, Birmingham, for prompt shipment and $13 to $13.50 for delivery over the last quarter. One of the largest interests reports today a refusal of $13 by a Birmingham furnace for quite a large shipment. Inquiries are out for from 1,300 to 1,500 tons of iron from car lots to 500 tons, and one inquiry was received today for delivery as far ahead as the last quarter of 1910. No tonnage was specified. Sales have not been large, but prices are firm, and dealers are confident they will go higher before many weeks pass. If any resale iron is on the market, it is held at a minimum figure of $12.50, according to reliable reports.

Ohio iron shows considerable strength, prices being firm at $15, Ironton, for No. 2 and malleable Bessemer. One inquiry is pending for 500 tons of Ohio iron for shipment over the last five months. A large car company has an order out for 3,000 tons of charcoal iron for delivery over the last half. The inquiry for 3,500 to 5,000 tons of basic, which has been pending several weeks, has not been placed or withdrawn.

Our prices delivered, to which the Birmingham freight of $3.75 has been added, follow:

No. 1 southern	$16.75 to 17.25
No. 2 southern	16.25 to 16.75
No. 3 southern	15.75 to 16.25
No. 4 southern	15.25 to 15.50

Coke.—One sale of from 25,000 to 30,000 tons of coke was made last week for smelter purposes for delivery over the next 12 months, commencing with the last quarter. The price was not made public. Another sale of 2,000 tons of furnace coke was made for prompt shipment. The market is firm, with the best-selected 72-hour Connellsville foundry coke being quoted at from $2.15 to $2.40, the higher price for future delivery and the lower for prompt shipment. One contract was booked last week for 400 tons of foundry coke for delivery over the last half of the year. Another sale of 700 tons of foundry coke was made for delivery over the next 12 months. Connellsville 48-hour furnace coke is firm at from $1.75 to $2, ovens, for prompt and future shipment, respectively. The freight to East St. Louis and St. Louis is $2.80 a ton from Connellsville and the West Virginia fields, and $2.70 from Virginia, when shipment is destined beyond St. Louis. Virginia and West Virginia prices remain the same.

Finished Material.—Structural iron men are decidedly pleased with the outlook for material in their lines. Bids for steel to be used in the new $2,000,000 municipal court building, aggregating probably 2,000 to 3,000 tons, will be asked for within a few days,

as well as bids for about 20,000 tons of steel to be used in constructing the new free bridge across the Mississippi river. Dealers also are looking forward to bids for about 300 to 400 tons of steel for the new theater to be built at Grand avenue and Olive street. One large interest reports a sale last week of 1,000 tons of steel for a bridge to be built by the Cotton Belt railroad at Rob Roy, Ark. The bridge will have a 440-foot draw.

Old Material.—Scrap iron prices, while unchanged, are firm as follows:

Cast iron borings, free from foreign material, net tons	$ 5.00 to 5.50
Steel axle turnings, gross tons	11.00 to 12.00
Steel railroad axles, net tons	17.00 to 18.00
Iron railroad axles, net tons	18.50 to 19.50
Miscellaneous steel scrap, gross tons	10.00 to 11.00
Old car wheels, gross tons	15.00 to 15.50
No. 1 railroad cast scrap, net tons	11.00 to 11.50
Heavy machinery cast, net tons	13.00 to 13.50
Stove plate and light cast, net tons	10.00 to 10.50
Sheet iron, net tons, uncut	4.00 to 5.00
No. 1 railroad wrought, net tons	12.00 to 13.00
Railroad malleable, net tons	12.00 to 12.50
Heavy melting steel, net tons	11.00 to 12.00
Relaying rails, net tons	17.00 to 18.00

BRITISH IRON MARKET.

American Strike Raises Hope for Increased Export Trade.

Office of THE IRON TRADE REVIEW, Prince's Chambers, Corporation St., Birmingham, England, July 10.

A faint streak of light has crept into the gloomy sky which has overshadowed the British iron trade of late, presaging, it is hoped, the dawn of a brighter period. This was early in the week, and though there has since been no further improvement, the position is certainly maintained at a higher point than that of a week ago. There is no very notable change, but matters have undoubtedly taken rather a favorable turn, and the despondent spirit which has recently pervaded the various markets has been slightly dispelled. It is thought the change may be due, to some extent, to the encouraging statistics shown in the Board of Trade return for June. But the buoyancy of foreign markets is not without its effect in this country, and it is hoped the American tin plate strike will lead to an increase in the British exports in this department.

METAL MARKETS.

ST. LOUIS.

July 19.

Lead and Zinc.—The price of $45 paid during the preceding week for zinc ore in the Missouri-Kansas-Oklahoma district, gradually dropped last week to $44, but lead manifested considerable strength, bringing $55 a ton. The decline in blend was attributed to a weak spelter market at St. Louis. A few sales were made on a basis of $45 a ton, but these probably were for ore contracted for during the preceding week. St. Louis spelter closed at the end of the week at $5.20 to $5.22½. High-grade ores were in strong demand last week, $46.50 being reported for choice mineral. This was on an assay base of $44, and the ore commanding this figure was 63½ metallic contents. Some of the mines are yet under water, causing a reduction in the output. Lead prices rose from $53 a ton the preceding week to $54 and $55 but still greater rise will have to come before the surplus ore in the various camps will be disposed of. The week closed with St. Louis pig lead commanding a price of $4.17½ to $4.20. Calamine brought from $18 to $22 a ton, and blende ranged down to $40 for small shipments.

NEW YORK.

July 20.

Prices of the non-ferrous metals at the close of business Tuesday, New York delivery, were as follows: Copper, Lake, 13¼c to 13⅜c; copper, elec., 12⅝c to 12⅞c; copper, casting, 12½c to 12¾c; pig tin, 29c to 29¼c; pig lead, 4.30c to 4.35c; spelter, 5.35c to 5.40c; antimony, Cookson's, 8¼c to 8½c; Hallett's, 7½c to 7¾c; outside, 7¼c to 7½c.

CHICAGO.

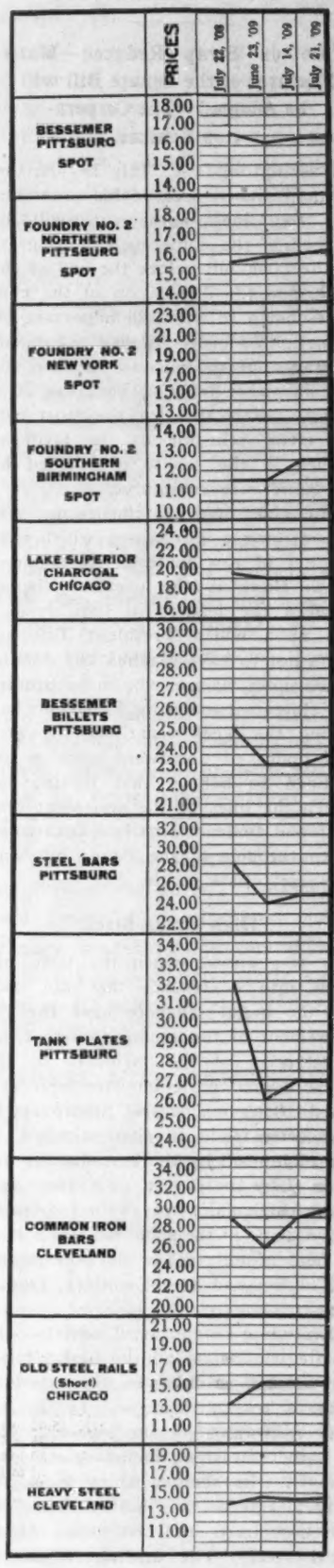
July 20.

There has been little stirring in metals in the week under review. Melters continue to buy from hand to mouth. Prices are without change. We quote Lake copper, carload lots, 13¾c to 14c; casting copper, 13⅛c to 13¼c; smaller lots, ¼c to ¾c higher. Spelter, 5.35c to 5.40c; lead, desilverized, 4.40c to 4.45c in 50-ton lots; corroding, 4.65c to 4.70c in 50-ton lots; car lots, 2¼c per 100 pounds higher; sheet zinc, $7 list f. o. b. LaSalle in car lots of 600-pound casks; pig tin, 31c to 31½c; Cookson's antimony, 10½c; other grades, 9¾c to 10¼c.

Old metals remain quiet and inclined to softness in sympathy with scrap iron and steel. We quote as follows:

Copper wire, 11¾c to 12c; heavy copper, 11½c to 11¾c; light copper, 10¾c to 11c; heavy red brass, 10¾c to 11c; heavy yellow brass, 8½c; light brass, 6¼c; No. 1 red brass borings, 9c to 9¼c; No. 1 yellow brass borings, 7¾c; brass clippings, 8¼c; tea lead, 3.60c; lead scrap, 3.90c; zinc, 3.60c; tin pipe, 24½c; tin foil, 23c; pewter, 17½c; electrotype plates, free from wood, 4c; electrotype dross, 2.90c; stereotype plates, 4⅛c; stereotype dross, 3c; prime slab zinc dross, $60 per ton.

PRICE CHART.



DUTY ON IRON ORE

STILL BEING CONSIDERED BY THE CONFERENCE.

Rate on Scrap Reduced—Many Features of the Senate Bill will be Adopted—The Corporation Feature.

Washington, D. C., July 19.—At this writing, with no reasonable assurance that the final agreement will be reached in the conference in progress on the tariff bill before the end of the week, and the disposition of the conferees being to withhold important information in order to give reasonable assurance of the success of their report in either body of congress, it is safe to assert that for the most part the metal schedule of the tariff as framed in the senate is adopted by the conference committee.

The chief item of importance still in controversy is iron ore, which is in the list of raw material items about which there is the greatest dispute between the leaders in both houses, and upon which President Taft appears not to have reached any definite conclusion. Those who have studied the statement made by President Taft during the week regarding the general policy of downward revision are inclined to believe that lurking between the lines of the statement may be found evidence that he leans strongly to the side of the Payne bill with these materials on the free list.

High Grade Steel.

It was known when the tariff bill went into conference that not only did the metal schedule have the endorsement of the senate conferees, but a majority of the members of the house conference committee were satisfied that considerable improvement had been made in that schedule of the Payne bill by the amendments put upon it by the senate. This was said to be particularly true with respect to those items in the schedule which cover high grade steel products, especially "high speed steel," cutlery, razors, etc.

According to present advices, the senate wins upon all the higher rates for finished products in the schedule. This is true with respect to the advances in rates on the higher grades of structural steel, including the proviso of that section which gives the general rate of the "basket clause" to the completed and assembled structural steel. The amendment incorporated by the senate relating to steel and iron plates is still in controversy.

Scrap Iron Reduced.

It is strongly intimated that the duties imposed on pig iron remain the same, but scrap iron is reduced from the $2.50 rate imposed by the senate to a rate of $1. Changes made in the paragraph covering wire nails retain the rates imposed by the senate on the smaller sizes, but slightly reduce the rate on the larger ones.

The questions raised regarding the duties imposed by the senate and what was intended by the house on the ferro-alloys are settled by an examination of the rates proposed on these items in both bills. The rate of $6 a ton on ferro-silicon valued at not exceeding $90 per ton, or containing not more than 15 per cent of silicon, is the highest rate contained in this paragraph of the bill, and is an increase of $2 a ton above the rate proposed by the house upon this grade of silicon. The senate amendment also included a valuation of ferro-silicon, as also on most of these items running through the paragraph.

Ferro-Silicon Duty.

Attention has been called to the comments made by Senator Burton, of Cleveland, in a recent interview, regarding the proposed rate on ferro-silicon, in which the senator said: "I am frank to say in the case of this latter article (meaning ferro-silicon containing not more than 15 per cent of silicon) a very strong case is made for an increased duty." This is the highest rate proposed, and is found in the senate bill, as against $4 a ton imposed by the house bill.

The provision of the house bill with reference to these alloys fixed a duty of 15 per cent on chrome or chromium metal, ferro-chrome, etc., "containing more than 15 per cent of silica." The senate provision fixes a valuation on these ferro-alloys up to and including $200 per ton, and places the rate of 25 per cent ad valorem; valued at more than $200 per ton, 20 per cent ad valorem. The house bill rate on ferro silicon, not more than 15 per cent of silica, and ferro-manganese, $4 per ton. The senate bill rate strikes out ferro-manganese, and provides as to ferro-silicon, valued at not exceeding $90 per ton, or containing not more than 15 per cent of silicon, $6 per ton.

Under the rules governing the work of conference committees, the committees are confined within the limitations prescribed by the higher and lower rates in a given paragraph.

New Customs Court.

Among the principal items of the administrative features of the tariff bill agreed upon is the proposed new customs court, which is to be established under a provision incorporated in the bill by the senate, and is agreed to by the house conferees. The drawback provision will be a compromise, and will leave the provision of the existing law very little changed.

It will not be known until the conference report is completed what action will be taken with respect to the corporation tax. This provision of the senate bill is understood to be entirely drafted under the direction of President Taft and Attorney General Wickersham. The house conferees have stoutly resisted the incorporation of this tax provision in the bill, but it is believed that since President Taft stands committed to it, the plan will be agreed to in some form. The chances strongly favor a reduction in the rates from 2 per cent to 1 per cent.

Inquisitorial Features.

It is regarded by the students of the corporation tax plan that in whatever form this tax shall be agreed upon, substantially the same inquisitorial features that are contained in the draft of the amendment as it passed the senate, will be adopted. These features authorize the commissioner of internal revenue, through an agent of that bureau, to investigate books and papers and to administer oaths in cases where false reports or no reports have been made by a corporation subject to the tax upon its net income. In other words, it is maintained by thoes who are familiar with the subject that the inquisitorial features of this tax would be as general in scope, so far as the interests affected are reached, as the general income tax would be.

ARTHUR J. DODGE.

The autumn meeting of the Iron and Steel Institute will be held in London, Sept. 27 to Oct. 1. The reception committee is being formed for the entertainment of members taking part in the meeting. It is hoped to arrange an excursion to Portsmouth for October 1.

The Lackawanna Steel Co. is preparing to start its seventh blast furnace, which will bring its iron production up to normal. This is the first time the plants of the company have operated full since the latter part of 1907.

WIRE PRODUCTS.

To be Manufactured by Jones & Laughlin—Aliquippa Contracts Let.

Wire products are to be included in the lines of finished material which will be manufactured at the new plant of the Jones & Laughlin Steel Co., at Aliquippa, Pa. Contracts have just been awarded by the company to the Morgan Construction Co., Worcester, Mass., for the equipment to be installed in the wire rod mill of the new works, and the wire drawing and other machinery will soon be placed. The award for the buildings for this mill has also been made.

The addition of a wire mill to the finishing operation of the Jones & Laughlin Steel Co. will be of considerable market significance, as the company at present is not a maker of this material. It is the intention of the Jones & Laughlin company to manufacture a full line of wire products. As previously stated, the company will further broaden its finishing activities by the erection at Aliquippa of a tin plate mill, contracts for which have also been awarded for a 10-mill plant.

Active construction work on the new Aliquippa plant is now progressing rapidly. Contracts have been placed with the Fort Pitt Bridge Works, Pittsburg, for the erection of a number of the buildings required, including those of the open-hearth department, soaking pits, blooming and billet mills. The Jones & Laughlin Steel Co. is fabricating in its own shops and will erect the structural material for the buildings of the new tin plate mill.

The open-hearth department at the Aliquippa works will occupy a structure 120½ feet wide from center to center columns and 660 feet long. It will provide space for five large open-hearth furnaces. Whether these furnaces will be of the Talbot continuous type, as now extensively used in the South Side works of the company, or of the regular model, has not yet been determined by the officials of the company. The grinding and mixing department and the stock house will be arranged in a combination building, the former having a length of 165 feet and the latter of 440 feet. This structure will be 73 feet wide. The 40-inch blooming mill will occupy a building 60 feet wide and 400 feet long. Attached to the blooming mill will be the engine house, 45 x 175 feet. The soaking pit building will adjoin the blooming mill. The billet mill will be of the Morgan continuous type. Mackintosh, Hemphill & Co., Pittsburg, have the contract for the blooming mill.

The tin plate plant will be of extensive proportions. It will include the hot mill building, 130 x 650 feet, cold mill building, 125 x 820 feet, pickling department, 60 x 150 feet, tinning house, 60 x 200 feet, annealing shed, 30 x 310 feet, product warehouse, 30 x 100 feet and general warehouse, 80 x 600 feet. The eventual capacity of the tin mill plant, as frequently stated, is to be 30 mills. This mill will be in operation sometime after Jan. 1, 1910.

The construction of the blast furnaces at Aliquippa is being pushed, and it is expected that three of the stacks will be ready for the air toward the latter part of the present year, probably about Nov. 1. A fourth furnace will be completed sometime thereafter.

LATE PITTSBURG NEWS.

(Special Telegram.)

Pittsburg, July 22.—Late pig iron sales include 500 tons of Bessemer to a local foundry for delivery up to October at $15.50 valley, and 1,000 tons of prompt basic to a western interest at $15 valley. Several small lots of No. 2 and 3 southern foundry have been sold here for mixtures at $12.50 and $12 Birmingham, or $17.40 and $16.90 delivered, respectively. A number of small sales in northern Ohio have also been made on the same furnace basis. The No. 4 iron went at $11.50 Birmingham. All the Sharpsville, Pa., stacks in the Shenango valley are now blowing, the Sharpsville, Claire and Alice furnaces having been started. The Ella furnace at West Middlesex, Pa., will go in about Aug. 1.

On account of the rioting at New Castle, state troops have been ordered to report in that city.

The strike at the plant of the Standard Steel Car Works, Butler, Pa., has been adjusted. Only a comparatively small number of men were involved.

WILL MOVE TO GADSDEN.

(Special Telegram.)

Birmingham, Ala., July 21.—The Southern Iron & Steel Co. has decided to remove its steel rod, wire and nail mills from Ensley to Gadsden, Ala. A new plant is to be erected at once.

RAIL ALLOTMENT.

(Special Telegram.)

New York, July 1.—The Pennsylvania, Maryland and Bethlehem Steel companies each got 5,000 tons of the Boston & Maine rail order. The Lackawanna Steel Co. got 6,000 from the Maine Central.

MARKET REVIEW.

(Continued from first page).

has started two at Ensley, one on foundry and one on basic. Eliminating the Tennessee company, the Corporation is now operating about 92½ per cent of its entire blast furnace capacity, which is equivalent to 107 per cent of that available during the height of the 1906 activity, and stocks are still at an absolute minimum. The only steel works not operating are at Columbus, and orders were given some time ago to have the furnaces at that plant put in shape for operation Aug. 1. Transactions in pig iron during the past week has not been as spectacular as for the two weeks preceding, but there has been a vast amount of quiet buying by a large number of the smaller interests. It is now estimated that the entire purchase of the International Harvester Co. amounted to 140,000 tons, of which 30,000 tons was southern iron, while the contracts of the American Radiator Co. call for 40,000 tons. The eastern basic iron situation is a striking feature of the week, as about 40,000 tons have been sold during the past few days for delivery during the remainder of this year, partly at $16 and partly at $15.75. Eastern steel works are very anxious to make contracts for 1910 iron, but furnace interests are not disposed to do so. The same is true generally of furnaces making foundry grades in the central west, some having withdrawn their quotation of $16 valley for No. 2 foundry.

SHEET MILL EXTENSIONS.

The Inland Steel Co., Chicago, is letting contracts for doubling the capacity of its sheet mill. Eight hot mills and two cold mills will be erected, which with the 10 hot mills now in operation will give the company a capacity of 10,000 tons of sheets per month. It is also the intention to increase the galvanizing capacity by the installation of five additional pots, making the output of this department 250 tons daily. There are three pots now in operation. The new mills are expected to be in operation around January 1, at which time, if business conditions justify, the capacity of the sheet mill will be further increased by the erection of six additional mills. A large warehouse will also be erected.

BAR MILL SCALE

Arranged by Republic With Amalgamated—Tin House Strike On.

At a conference betwen officials of the Republic Iron & Steel Co. and representatives of the Amalgamated Association of Iron, Steel and Tin Workers at Pittsburg, July 16, an amicable adjustment of the boiling and finishing scales for the bar mills for the year ending July 1, 1910, was reached. A general resumption of the active mills of the Republic company which have been idle since July 1 followed Monday, July 19.

The new scale in essential details is the same as that which was in effect in the mills during the year up to July 1 and is practically identical with that signed by the Western Bar Iron Association. A few changes are made in the footnotes, but the wage scales remain the same as last year, the boiling rate being $5 upon a 1 cent bar iron card. The new agreement applies to the same plants as last year, including Brown-Bonnell and Mahoning Valley works at Youngstown, O., Corns works at Massillon, O., Inland works at East Chicago, Ind., Sylvan works at Moline, Ill.; Toledo works at Toledo, O.; Tudor works at East St. Louis, Ill., and Alabama works at Gate City, Ala. The last plant has not been in operation. The Birmingham mill at Birmingham, Ala., is not taken into acount in the agreement, as it is not likely that this works will ever be operated.

Wanted Plants Separated.

Upon the expiration of the past year's agreement, July 1, the Republic company gave notice to the Amalgamated association that it desired to treat for its Brown-Bonnell and Sylvan plants apart from negotiations on the general scale. The union would not consent to this arrangement. The Brown-Bonnell and Sylvan plants are now strictly steel propositions.

The regular bi-monthly examination of the sales sheets of the representative bar iron companies to fix the wage rate for July and August under the scale was held at Pittsburg, July 16. This showed an average 1.25c bar iron card, which fixes the boiling rate at $5.12½ for the next two months, compared with a 1.30c card and a rate of $5.25 which ruled during the two months preceding.

Tin House Workers Strike.

The strike of the tin house employes holding membership in the Tin Plate Workers' International Protective Association of America against the open shop order of the American Sheet & Tin Plate Co., which was inaugurated at midnight July 15 upon the expiration of the annual scale agreement, has affected the finishing departments of some plants in which the Amalgamated association has no organization of the hot mill employes. This has been the case at the Chester, W. Va., and New Kensington, Pa., plants, where the working tin house forces have been reduced by the strike order. In the plants where the Amalgamated association is striking, the tin house employes have generally joined in the movement against the open shop, as the latter have had union organizations in most of these works.

More Independents Sign.

The Kansas City Bolt & Nut Co., Kansas City, Mo., and the Youngstown Iron & Steel Roofing Co., Youngstown, O., are the latest independent interests to sign the annual boiling and finishing and sheet mill scales with the Amalgamated Association of Iron, Steel and Tin Workers.

SERIOUS RIOTING

Accompanies Strike at Plant of Pressed Steel Car Co.

Serious rioting and disorder with striking workmen occurred the past week at the plant of the Pressed Steel Car Co., at McKees Rocks, Pa., which necessitated the invoking of the state constabulary of Pennsylvania to protect the workmen and property of the company. Several pitched battles have taken place between the men and the guards and a number of persons have been wounded. The strikers are made up largely from the ranks of the foreign workmen who are objecting to a pooling system of wages which has been in effect in the works, whereby a group of men is paid a fixed sum for certain finished work. F. N. Hoffstot, president of the Pressed Steel Car Co., has issued a statement dealing with the trouble, as follows:

The reports published in some of the local newspapers were grossly inaccurate and the criticism against the pooling system of paying wages is not justified, as those who are in possession of the facts know. The pooling system is really to the advantage of the men. No man in our works receives a less rate on payday than that agreed upon at the time of his employment. If, however, by his ability he is able to make more on this system of piece work, he gets it. This method is in operation at the best car works in the country. The extent of the whole trouble has been greatly exaggerated, as only 60 out of over 5,000 men were actually involved in the disagreement about the pooling system.

Several hundred of the riveters at the plant of the Standard Steel Car Co., at Butler, Pa., have also struck for higher wages and some disturbance has resulted.

Labor Notes.

About 100 crane workers at the plant of the Midvale Steel Co., Nicetown, Pa., went on a strike early in July. Their places were promptly filled and the operation of the plant was not delayed.

Manufacturers of bar iron and muck bar are generally refusing to sign the puddling scale of the Sons of Vulcan which fixes a $5.25 per ton rate on a 1-cent bar iron card. This is 25 cents a ton in advance of the scale of the Amalgamated Association of Iron, Steel and Tin Workers which provides a rate of $5 a ton on a 1-cent bar iron card. The Youngstown Sheet & Tube Co. and the Girard Iron Co. have signed the Sons of Vulcan scale rather than run the risk of interfering with the operations of their large finishing departments in which their iron is consumed.

INCREASING SHEET MILL CAPACITY.

The Youngstown Sheet & Tube Co. is preparing to proceed with the extension of the sheet mill capacity of its plant at Youngstown, O., as outlined sometime ago. The company has placed an order with the Mesta Machine Co., Pittsburg, for a twin-tandem compound Corliss engine, 34 and 60 x 60 inches, which will drive the new mill. The rolls on the new mills will be of the 28-inch size and the housings will be especially heavy. The present controversy with the sheet mill employes over the wage scale will have no effect upon the company's proceeding with the improvement. Outside of the sheet improvement, the operations of the mills of the company have not been interrupted by the trouble with the men, and the tube, wire and other plants are running steadily.

Report Unconfirmed.—The report that the Electric Steel Co. of Cleveland has acquired an extensive site near Butler, Pa., upon which it proposes to erect a steel plant is not confirmed by the Pittsburg real estate interests handling the land in question who state that negotiations for such a transfer are still in progress.

NEW YORK SHEET STEEL CO.

Starts Under Auspicious Conditions—The New Management.

The plant of the New York State Steel Co., of Buffalo, N. Y., reorganized, has progressed so far towards completion that the blast furnace was blown in Wednesday afternoon, July 14, and will be continued in operation with daily capacity of 450 tons. The furnace was only recently finished, its construction having been started by the old management. It is expected that the repairs and alterations on the two Talbot open-hearth furnaces will be finished by Aug. 15, and the rolling mill will be ready to operate again by that date. Each Talbot has a daily capacity of 250 tons. With this equipment, the New York State Steel Co. will be able to operate to best advantage in accordance with most progressive ideas.

The extensive manufacture of billets and blooms will constitute the principal industry of the plant and these products will be placed upon the general market. Buffalo welcomes this enterprise, especially as it seems certain to be a leading commercial factor in that city under its new management, which consists of F. W. Beegle, president, Beaver Falls, Pa.; Frederick Davidson, vice president, Pittsburg, Pa.; Lewis R. Davidson, secretary and treasurer, Beaver Falls, Pa. The general superintendent is F. E. Porter, of Birmingham, Ala. The works are situated between Abbott road and Buffalo river, with desirable railroad and shipping facilities. The general offices are located at No. 475 Abbott road.

PIG IRON PRODUCTION FOR FIRST HALF OF THE YEAR.

The production of pig iron in the United States for the first six months of 1909 according to statistics collected by the American Iron & Steel Association was 11,022,346 gross tons. This is compared with 6,918,004 tons in the first half of 1908, and 9,018,014 in the second half of 1908.

In the half year just concluded, Pennsylvania produced 4,755,079 tons, Ohio, 2,242,987 tons; Illinos, 1,057,874 tons, and Alabama, 800,708 tons.

The total production of bituminous coal and coke pig iron was 10,582,455 tons, while anthracite and mixed anthracite and coke production reached 268,502 tons. Seventeen states made charcoal pig iron during the period under consideration, the total being 171,389 tons, of which Michigan supplied 103,733 tons.

The total production of Bessemer and low-phosphorus pig iron amounted to 4,481,490 tons, and of basic pig iron not including charcoal iron, 3,288,573 tons. Spiegeleisen and ferro-manganese production amounted to 80,785 tons.

FINE RECORDS

Made in Handling Ore—Engineer Kills Two Men in Self Defense.

The steel trade has come into its own again and its activity is significantly reflected on the lakes. Inversely, when times are good on the lakes they are good in the iron business, for the lake trade is the base of the iron trade, because the movement of ore is the dominant business of the lakes. At present it is practically the only business and it is moving at a wonderful clip. With such facility is it being conducted that what was achieved three years ago only under exceptional conditions, with everything primed and in readiness to make a record, has now become the common business of the day. That wonderful battery of four Huletts and four Browns at Conneaut handled 19,999 tons of ore last week in 11 hours, the Corey with 9,935 tons of ore being unloaded in four hours, 15 minutes, and the Frank C. Ball, with 10,064 tons, in five hours and 45 minutes—and this without any preparation whatever for extra dispatch. The significance of this achievement can better be appreciated when it is known that unloading plants of at least three other ports are capable of approximating this record. It is likely that over 6,000,000 tons of ore will be moved this month.

The rather quick return of prosperity in the steel trade has made labor adjustments difficult, and though advances in wages have been announced by a number of iron and steel companies, strikes have occurred; a further reflection of which is to be found in the breaking out afresh on Saturday night in Cleveland of violence towards non-union men with the result that two of the union men lost their lives. James G. Purvis, chief engineer of the steamer Centurion, exercised great forbearance and took much punishment before he drew his revolver and shot the three men who attacked him, killing two of them instantly. He was exonerated by the police and returned to his boat.

The contention of the Lake Carriers' Association that the engineers had no right to surrender their licenses to the Marine Engineers' Beneficial Association has been sustained by the department of commerce and labor through Solicitor Charles Earl, who has held that a license is subject to revocation when the holder voluntarily parts with it to others.

The plans for the new ship yard and dry dock at Port Arthur have been prepared by the American Ship Building Co., and call for an expenditure of about $700,000. The plant will be operated by the Western Dry Dock & Ship Building Co. as a part of the American Ship Building Co., the deal having been put through by W. L. Brown, chairman of the board; Robert Logan, general manager, and A. B. Wolvin, of Duluth. The new ship building company will be exempt from taxation for 20 years, except school taxes, and will receive a bonus of $25,000 a year for ten years in addition to a site of 100 acres of land. The deal is still subject to a ratification vote of property owners which will be taken on Aug. 10.

The prediction made in last week's REVIEW that new orders for ships might be expected is already borne out. The American Ship Building Co. announces a contract for the construction of a bulk freighter 524 feet long but withhold for the present the names of the contracting parties. Mr. Harry Coulby, president and general manager of the Pittsburg Steamship Co., also says that he may place orders for two additional 600-footers later.

CONTRACTS FOR STEEL WORK.

The Des Moines Bridge & Iron Co., Des Moines, Ia., has recently closed contracts in steel work as follows: Des Moines Electric Co.'s power station, 340 tons; same company, self-supporting steel stack, 120 tons; Cedar Rapids and Iowa City Light & Railway Co.'s boiler house, 100 tons; Eureka Stone and Ore Crusher Plant, Cedar Rapids, Ia., 60 tons.

A New Line of Motor Starters.—Recognizing that there is a demand for a motor starter of rugged construction, the Electric Controller & Mfg. Co. of Cleveland has developed and placed on the market a new line of starters which are essentially of mill type design. In designing these mill type motor starters, the company has attempted to interpret severe operating conditions, and it is understood that some features not found in any existing motor starters are included.

The sales and financial departments of the Longmead Iron Co. will be moved from the Drexel building, Philadelphia, to the general offices at the mills, Conshohocken, Pa.

PERSONALS.

Leonard Peckitt, president of the Empire Steel & Iron Co., started for Europe Friday.

Benjamin Nicoll, of B. Nicoll & Co., sails July 27 for an European visit of several months.

F. M. Swanzy, president of the Honolulu Iron Works, has returned to Honolulu, after a brief visit to the states.

Robert Pitcairn, formerly resident assistant to the president of the Pennsylvania railroad, is lying critically ill at his home in Pittsburg.

Elliott A. Kebler has assumed his new duties as resident agent of M. A. Hanna & Co. at Pittsburg and has opened offices at 606 Union Bank building.

William G. Smith, assistant superintendent of the Shenango Furnace Co., at Sharpsville, Pa., has resigned to accept employment with Corrigan, McKinney & Co., at their Charlotte, N. Y., furnace.

Graham Stevens has been appointed superintendent of the Sylvan plant of the Republic Iron & Steel Co., at Moline, Ill., succeeding Harry Steinbreder, who was recently transferred to the East Chicago plant of the company.

Grant D. Bradshaw has severed his connection with the engineering force of the Indiana Steel Co., Gary, to embark in business as a consulting and industrial engineer. He has opened offices at 77 Jackson boulevard, Chicago.

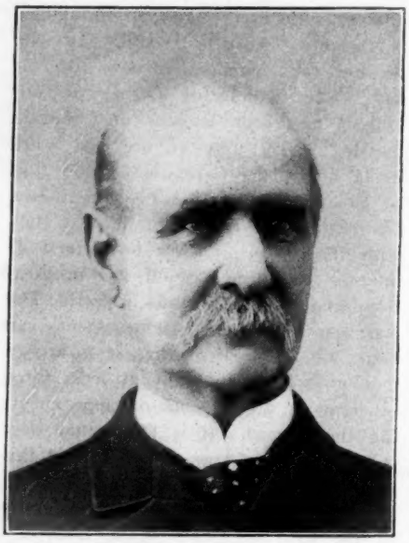
B. Granger Harrison, from the London office of Sota & Azna, is in this country in connection with the selling of Spanish iron ore for 1910 delivery. His headquarters is at the firm's office in the Arcade building, Philadelphia, where V. DeYsasi, United States agent, is located.

Chas. M. Schwab, president of the Bethlehem Steel Co., accompanied by a small party, spent a few days last week inspecting the titaniferous ore deposits of the MacIntyre Iron Co., in the Lake Sanford district of the Adirondacks. The party was entertained by the president of the company, Wallace P. Foote Jr., at his camp on Lake Sanford.

Edward G. Donald, manager of the waterwheel department of the Platt Iron Works, Dayton, O., has resigned to become special representative for the Pacific coast of the hydraulic turbine department of the Allis-Chalmers Co., Milwaukee, Wis., with headquarters at 599 Mission street, San Francisco. Mr. Donald has been with the Platt works for 20 years, five years as manager of the San Francisco office.

C. R. Crane, vice president of the Crane Co., Chicago, son of Richard T. Crane, founder of the company, has been appointed by President Taft to be minister to China. Mr. Crane for 15 years has had charge of the foreign trade of his company, and traveled extensively. During his travels, he spent much time in China, his business interests taking him into every province and bringing him into close contact with all classes of Mongolians. He is also prominent as a civic enthusiast, and for years has been a factor in movements for the advancement of Chicago.

With a view to improving and extending the bridge and structural trade of Hungary, a commission of four arrived in this country about a week ago to make a study of American methods. They are now investigating the bridges of New York, but will shortly leave for Philadelphia, Pittsburg and Chicago. The commission is composed of Albert Szante, councillor to the Hungarian minister of commerce; Dr. Janes Kosselka, technical councillor and professor in the University of Technic, in Buda Pesth; Bela Obholzer, chief engineer of the Royal Hungarian state railways, and Janes Seltsam, superintendent of the machinery plant of the Royal Hungarian state railways.



WILLIAM B. DENNIS.

OBITUARY.

Mathew Gill Jr., at one time a well known figure in the eastern Pennsylvania iron trade, committed suicide July 19 at his home at Radnor, Pa.

Robert Clark, one of the oldest pioneers of the iron industry in Chicago, died recently at his home in that city, after an illness of several months duration. Mr. Clark came to Chicago with his father in 1849, from Scotland, and was connected with the iron manufacturing business from that time until his retirement 15 years ago, as president of the Aetna Iron Co. He was 80 years of age.

Joseph W. Thompson, the inventor of the steam engine indicator, which now bears the name of the "American-Thompson," made by the American Steam Gage & Valve Mfg. Co., Boston, Mass., and many features of the Buckeye engine, died at his home in Salem, O., July 15. He was associated with the Buckeye Engine Co., Salem, O., practically all of his business life. Mr. Thompson was 76 years of age at the time of his death.

Francis E. Duduit, a prominent factor in the charcoal iron industry of the Hanging Rock region for many years, died July 4 at his home in Portsmouth, O., aged 82. He was one of the builders of Madison furnace, which dates back to 1854 and which he managed for a considerable time. He was also associated with the management of Oliver and Monroe furnaces, two of the most successful stacks in southern Ohio.

Leffert L. Buck, formerly chief engineer of the bridge department of New York City, died July 17 from a stroke of apoplexy. Mr. Buck was born in Canton, N. Y., in 1837. His name was connected with several of the greatest bridges in this country, among them the Brooklyn, Manhattan and Williamsburg bridges in this city, two steel arch bridges at Niagara Falls, the Driving Park Avenue steel arch bridge and the Platt Street bridge over the Genesee river at Rochester, the Columbia river bridge for the Northern Pacific railroad at Pasco, Washington, and the Verugas bridge in Peru.

The death of William B. Dennis at his home in Kirkwood, Mo., a suburb of St. Louis, July 13, marks the end of one of the oldest and best known pig iron men in the Mississippi valley. Mr. Dennis was in his eighty-second year. He had been ill only a few weeks. He was born in Georgetown, O., and removed to St. Louis about 40 years ago. Since then he had represented the Dayton Coal & Iron Co., the Brier Hill Iron & Coal Co., and the Wellston Furnace Co., later becoming identified with the DeCamp Bros. & Yule Iron, Coal & Coke Co., with which concern he remained until he retired from active business about two years ago. Mr. Dennis' wife, who was Miss Hannah Moore, died 20 years ago.

JAPANESE GOVERNMENT

Said to Have Contracted for California Ore—Negotiating for a Mexican Plant.

City of Mexico, July 12.—It is reported that the Japanese government has made a contract for 500,000 tons of iron ore to be shipped from the deposits in Lower California below Ensenada on the Pacific coast side of the Peninsula. The details of the transaction are not reported, nor is there any substantial confirmation of the negotiation, but it is quite likely that there is some truth in the report, for it is a fact that about two years ago an engineer representing the Japanese government made an investigation of the possibility of securing a cheap source of iron ore from the Pacific coast of Mexico and from California. No immediate definite results followed from the inquiry nor were there any definite negotiations at the time, although several parties having control of available deposits attempted to bring about negotiations. The deposits in Lower California are extensive and are of good grade. Some years ago, they were examined by engineers. They are reported to be bedded deposits and are near the coast and convenient to a harbor. It is presumed that they are owned by Americans still. The significance of the deal, if it really turns out to be a deal, will be very great, for there are a large number of commercial deposits in Mexico on the Pacific coast which could be developed to supply ore for shipment, if a favorable and large market were afforded. It is possible also that some of the deposits in southern California could be utilized for this market, because they are within practical shipping distance of the Pacific ports and are very extensive.

The Plant at Tula.

English interests are negotiating for the purchase of the iron plant and mines at Tula in the southern part of Jalisco. This plant has been in operation for many years and has recently reverted to the Mexican owner after a lease to an American company for operation for a period. Charcoal is used for fuel. There are reports of coal deposits in the region of these iron deposits, but the prospect of commercial coal deposits is not considered very good by authorities who have studied the formations. At several localities in Jalisco and Michoacan, there are local iron plants that, for a hundred years or more have been making charcoal iron on a small scale, some of which are still in operation for the supply of the limited local demands.

Price of Iron in Mexico.

The Monterey Iron & Steel Co. has issued the following interesting advertisement for local consumption:

It is known that the high oven of the Compania Fundidora de Fierro y Acero de Monterey, S. A., has been in operation, without interruption, since December 5 last, and that the stock of first fusion pig iron, suitable for foundries, is now so great in the patios of the company that the directors have formed the plan of selling it in the interior market at a price that will make absolutely impossible the importation of this industrial raw material. We understand that the last shipments of imported pig iron reached a total cost of 78 pesos per ton of 1,000 kilos on the Central Mesa of the country, and we are able to announce that from today the Monterey Iron & Steel Co. will sell pig iron in carload lots of 18,000 kilos at the price of $48 per ton, free on board cars at Monterey. Analysis of this iron shows that it is entirely suitable for foundry work, and the foundrymen of the country, in view of the very low price—such as has not been seen in many years—propose to almost entirely discontinue the use of small bits of iron in their work.

A pesos has a value in American money of 50 cents and a kilo is 2 1/5 pounds.

COAL MINERS' STRIKE

May Affect Supply of Steel Company —Canadian Bounties.

Toronto, Can., July 20.—The strike of the coal miners employed by the Dominion Coal Co., at Glace Bay, N. S., which began on July 6, has so seriously curtailed the output that the supply of the Dominion Iron & Steel Co. is likely to be affected. The requirements of the steel company are 80,000 tons per month and although it has coal ahead for some time, it is looking for other sources of supply in case of the prolongation of the difficulty. A steamer chartered by the steel company sailed for Philadelphia on July 12 to bring a cargo of American coal to Sydney. The bituminous coal companies of the United States are looking for orders from Nova Scotia consumers. The steel company is procuring a portion of its iron ore from the Moose Mountain iron mine near Sellwood in the Sudbury district, Ont. On July 10, a cargo of 1,800 tons of ore from Moose Mountain was shipped to the Sydney plant via Key Harbor on the Georgian Bay, being the second shipment made from this mine.

The car manufacturing plant of the Rhodes-Curry Co., at Amherst, N. S., one of the most complete in America, has been transferred to C. Meredith & Co., Ltd., and the Royal Securities Co., Montreal, by whom a new flotation of stock is being handled. Preferred stock carrying 7 per cent interest cumulative, to the extent of $1,850,000, and common stock, $1,000,000, are being placed on the market.

The Ontario Bureau of Mines has issued a statement giving the output of the metalliferous mines and works of Ontario for the first three months of 1909, showing a considerable increase all round as compared with the first quarter of 1908. The production of iron ore was 30,401 tons, valued at $74,480, as compared with 24,572 tons valued at $66,424; and the output of pig iron was 104,958 tons, value $1,614,395, as against 90,826 tons, value $1,467,780, for the first quarter of 1908.

The Canadian Department of Trade and Commerce has issued a return showing the amount paid by the government in bounties to the iron and steel industries during the fiscal year ending March 31 last. The total was $2,467,306, a decrease of $330,555, as compared with the previous year. On pig iron the bounty paid in 1908-9 was $693,423, as compared with $863,816; on steel $838,100, as against $1,092,200; and on wire rods $333,090, as against $347,134. The production of pig iron last fiscal year was 609,431 tons, a decrease of 74,348 tons, and the productions of steel was 570,588 tons—a decrease of 91,351 tons.

Receiver Appointed.—On application of Humphrey Bond, representing the firm of Vivian Bond & Co., one of the creditors, Hugh A. Bayne, has been appointed receiver in bankruptcy for the Western Foundry Supply Co., 50 Church street, New York City, which had been in financial difficulties since May 15. The company has claims amounting to about $80,000; it has grinding mills at Elizabethport, N. J., and East St. Louis, Ill., with a deposit of manganese ore at Elkton, Va., and outstanding accounts of $18,000.

Twenty-four million pounds of steel will be used in the bridge which the Pacific railway is building at Lethbridge. The steel towers forming the piers are practically completed. The bridge is 1 mile and 47 feet long, and 312 feet high at its highest point. It rests on 67 steel piers with a natural rock foundation at the bottom of the old Manitoba river. It will cost $1,500,000.

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February	5,346
March	5,396
April	5,508
May	5,533
June	5,551

July 22, 1909.

MACHINE TOOLS, WAGES AND PRICES.

The improvement in the demand for machine tools is bringing out some interesting phases of the situation of manufacturers in this line of industry. It is now believed and quite generally conceded that the improvement is permanent and that a return to normal conditions is not far distant.

The reasons upon which the permanency of the present gradual improvements are based, are, first, the crop promise. According to the figures given by the United States agricultural department as to the condition of the principal cereal crops on July 1, the total cereal production of the leading grains, wheat, corn, oats, rye and barley, will be the largest ever produced in a single year in this country. These figures assume that the present condition shall be maintained or not materially lessened before the crops mature. Second: The general revival in the iron and steel trade and the placing of orders by railroads. Third: The probable early settlement of the tariff question.

Under the reasonable assumption that the present improvement in the call for machine tools is permanent, the question of increasing the production in the shops confronts the manufacturer. It is found to be difficult to attract the men who have been let out during the depression back to their old positions. Naturally each shop made an effort to maintain its organization and retained the best employes, reducing the pay roll by disposing of handy men and the inefficient and mediocre. This class of labor has been forced to find employment and in many instances it is found that the men have secured better paying positions elsewhere and many have left the city in which they were originally employed in machine shops. It may be said also that during the depression the number of apprentices in the shops has been much reduced and the manufacturer is now confronted with the problem as to how to man the shop. It is fortunate that the increase in demand is gradual and that shop output is to be increased slowly, because a sudden heavy demand would undoubtedly bring about exorbitant wage inducements in order to secure labor.

In the discussion of these questions the conclusion is reached that an advance in prices of machine tools and machinery equipment in the near future is inevitable. As demand increases, the manufacturer sees but little hope of equipping his shop with a full quota of employes without paying a higher rate of wages than was paid during 1907, and with the increased pay-roll there is likely to be decreased efficiency by reason of the scarcity of experienced men and the additional likelihood of an increase in wages to hold the efficient mechanics in their places. This comment is timely, as already urgent efforts are being made to secure all classes of machinists throughout the country.

It may be argued that with abundant crops the cost of living should be sufficiently reduced to hold wage-rates in check, but it takes a surplus production of food products materially to reduce prices to consumers, and to obtain a material surplus two abundant crops in succession are really necessary. Assuming that the cereal production is likely to be the largest ever recorded, there are practically no surplus crops now on hand, which is obvious from the high prices prevailing for all grains and livestock. With the prospect of only a slight modification in the cost of living as a probability, the drifting class of labor and the medium priced help will be likely to make unusual efforts to secure the most remunerative employment and as general business improves the opportunities to work will increase.

The tendency is, therefore, toward an increased pay-roll in the shops without an increased output, which unquestionably argues in favor of an increase in costs and consequent advance in prices of product.

Carrying the question of increased cost of production of machine tools a little further, the matter of refinement in the way of precision and perfection of the machines must be considered. The machine that would sell on the market 15 or 20 years ago would not be considered today. The development of higher education in engineering has brought about such critical standards for exactness and accuracy in the machines that the utmost care must be exercised by the manufacturer. Besides the additional expense incurred in beautifying the machine before it leaves the shop is a factor.

The conclusions reached from the above premises do not necessarily imply a return to the boom times of 1906 and 1907. Such conditions are not likely to occur again in the near future; because the foreign demand for machine tools will probably never again be so great as in those years. It is well known that industrial conditions abroad have been no better than in this country and with the improvement of industrial affairs in Europe, the manufacturers of this country must face the knowledge that the foreign manufacturer has made great strides in the way of holding trade at home.

American types of machines, found to be wanted in Europe, have been copied by the European manufacturers, and, in some instances, improvements over the American types have been made. Of course, machines of extraordinary efficiency, when first introduced, will sell abroad, but our export machinery trade is not likely ever to be as great as it was in the past.

It may be mentioned that the efficiency of machine tools has been constantly developed, so that we have reached a point where one modern machine will sometimes replace two or three old types, which can mean nothing else than the reduction in the number of machines operated to produce the same amount of work. There should be, however, sufficient demand to keep the shops in this country profitably employed when business and monetary conditions are again normal, and there are still vast resources in this country to be developed and with the development of these resources the demand for machinery must increase.

STEEL MAKING REVOLUTIONIZED AGAIN.

Of the methods of separating fools from their money there is no end. Keely motor; gold from sea water; liquid air; the "cold" motor; the carbon-dioxide engine, and a number of others more or less recent, have all served their turn. The iron and steel industries have been remarkably free from the contamination of the fakir, but if the following story, which comes from London, is true, it would indicate that the predominance of steel in the arts, helped, no doubt, by the developments in electric smelting and refining, is being used as a basis for further "easy money" promotion:

London, June 19.—Martin S. Kalmon, who controls the newly discovered process of converting finished iron into steel, is in London again. Today he gave some interesting details of the new process and its possibilities.

"In a couple of weeks' time," he said, "I am going to arrange for a demonstration, to be attended by representatives from the world's largest steel manufacturers and numerous government experts from several countries, to whom the possibilities of our process will be explained. As an instance of what can be done we may take a heavy chain and give one end of it a thin coating of steel, thin as an egg shell. To the other end we will give a coat of half an inch or an inch in thickness, while the center will be converted into solid steel. We will work it any way you like.

"We can work you a fine razor blade out of iron, shaping and grinding it to the required form, and after this is all done we put the blade through our steeling process and convert it into the hardest kind. Steel blades produced in this way are equal in every respect to the finest Sheffield makes.

"I firmly believe our process will revolutionize the whole steel business. Big furnace methods will be entirely superseded. I have tested the method in every possible way, and noted European experts have done the same thing and always with the most gratifying results.

"The method is quite simple. Iron is simply treated with a chemical composition, being subjected to heat at the same time.

"The chemical fumes have a regular property, converting iron into steel and tempering it to a wonderful degree.

"The best steel is tempered to 63 points. We can quite easily temper our steel to 243 points. This is almost unbelievable, I admit, yet it is quite true.

"It is extremely likely that the English rights to our process will be sold to Vickers & Sons, and Maxim and other big firms of similar character are negotiating for the rights in other countries."

Doubtless the scheme will produce the results desired—the fleecing of the uninformed; a jargon of technical terms and phrases, adroitly strung together, is wonderfully impressive, sometimes. We may expect the foregoing to be followed by the announcement of the formation of a big syndicate, probably with a titled head, and the opening of stock subscription lists, and those who do not bite at once will be assured that they are losing a golden opportunity.

The proofreader certainly allowed his opportunity to pass when he failed to correct the spelling in "our steeling process."

FREIGHT TRAIN LOADS INCREASING.

A new record for a freight train load was made by the Pennsylvania railroad last month, a load of 5,544 net tons of coal being hauled for 127 miles at an average speed of 17.6 miles an hour by a new engine of the H-8-b type. The grade did not exceed 12 feet to the mile.

Tests of this sort show how much the possibilities exceed the average of actual practice. The average train load is governed by traffic conditions, since often it is not possible to make up a train of the maximum weight which physical conditions will permit. All roads are not equipped with engines of the greatest tractive power, and grades vary.

Inasmuch as the record train load mentioned is just 15 times the average train load the country over, it is obvious that the work of the future in railroading will be to progress in the direction of bringing up general practice towards the maximum possible under the exceptional conditions, rather than in the direction of increasing the maximum. The steepest grades are being eliminated from time to time, old and light engines are being replaced by heavier ones, and traffic is becoming denser, so that heavier and heavier trains can be made up without unduly delaying the movement of individual consignments. The total ton-mileage freight movement in the country increased from 79,193,000,000 in 1890 to 215,700,000,000 in 1908, an increase of 172 per cent in 18 years, equivalent, roughly speaking, to tripling in 20 years, while the mileage of road operated increased in the 18 years only from 166,703 miles to 232,046 miles. As a result of this divergence, the number of freight ton miles divided by the number of miles operated, or in other words, the average number of tons of freight passing a given point in a year, increased from 500,000 tons in 1890 to 900,000 tons in 1908.

The number of ton-miles of freight per freight train mile is given by Poor as follows:

1890, 163.99; 1891, 164.55; 1892, 161.14; 1893, 170.42; 1894, 172.81; 1895, 180.23; 1896, 188.82; 1897, 195.56; 1898, 211.06; 1899, 237.64; 1900, 274.79; 1901, 294.70; 1902, 308.19; 1903, 314.28; 1904, 318.42; 1905, 334.90; 1906, 357.51; 1907, 361.22; 1908, 366.01.

On account of the diverse nature of the traffic, the New England and the southern states show the smallest average train loads, while the northwestern states, with the heavy grain traffic, show large loads, and the middle Atlantic states, with their heavy mineral traffic, stand highest.

The greatest opportunity for the railroads to increase their earnings lies in increasing the density of freight traffic, for this can be done by increasing train loads very greatly, as well as by increasing the frequency of trains. With passenger service there is not the same opportunity to increase the load per train.

Tendency Toward Upward Movement.

Sharp rises and several high marks were the most striking points in the stock market during the week, apparently a reaction from the dullness of the previous week. The market made a firm opening, and continued strong through the week, closing with a tendency to continue the upward movement.

On Monday United States Steel common reached its highest previous level, 69⅞, making a new high mark of 70 on Tuesday. Crucible Steel preferred also made a new high record for the year, selling at 73⅛ on Tuesday. Wednesday brought an advance in wheat for July delivery, and also a record price for Crucible Steel for two years, 74⅞. Harbison-Walker Refractories, preferred, reached the highest price in its history, Thursday, 87. Crucible Steel preferred also continued an upward movement. Friday, Crucible Steel was a big feature of the Pittsburg market, gaining 1½ points. More than 7,000 shares changed hands. Steel common was the feature of the New York market, gaining 1¼ points. On Saturday, steel continued strong, both common and preferred stock increasing.

Money on call ranged again between 2 and 1½ per cent, unvarying ease ruling, despite the gold exports and the return by New York banks of government bonds recalled from the banks. Time money during the week was distinguished by a liberal supply and still rather apathetic demand. Exports of gold for the week were $2,748,000, nearly all going to Argentina. Bank clearings in the United States during the past week approached again $3,000,000,000, the estimated total being $2,917,068,000. This was an increase of 11 per cent over last week, of 12 per cent over a year ago, and of 8 per cent over two years ago, establishing high records of clearings for this week in the country's history. The actual report of clearing house banks showed loans decreased $4,654,300; deposits decreased $7,548,900; surplus decreased $242,425, and the ratio of reserve, 19.3 per cent, an increase of 0.1. Commercial failures for the week were 237, compared with 196 the previous week, and 250 the corresponding week last year. Shares were sold to the number of 1,858,883, compared with 2,001,699 the previous week, and 2,706,600 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $20,890,000, compared with $21,807,700 the previous week and $17,914,000 the corresponding week last year. The American Railway Association reports the surplus of idle cars on July 7 to have been 259,697, a decline of 2,420 from June 23, and of 17,577 from the week of June 9.

THE LEADING INDUSTRIAL SECURITIES.

	Closing Quo. July 17	Changes in week	Date Ann.	1909 M't'g.	Stock Outstanding	Dividend Basis	Dividend Last Declared	Dividend Date Last Div. Pay.
Allis-Chalmers	14⅞	— ⅛	Sept.	2	$19,820,000		.....	.....
Allis-Chalmers, pr	52¼	+ ½			16,150,000	7 cum	1¾ Q.	Feb., 1904
American Can	11¼	.....	Feb.	2	41,233,300		.....	.....
American Can, pr	81	— ½			41,233,300	7 cum	1¼ Q.	July, 1909
Am. Car & Foundry	60⅛	+2⅜	June	24	30,000,000		½ Q.	July, 1909
Am. Car.& Fdy., pr	118¼	+ ¾			30,000,000	7 n. c.	1¾ Q.	July, 1909
American Loc	60⅞	+ ⅜	Oct.	19	25,000,000	5	1¼ Q.	Aug., 1908
American Loc., pr	119	+ ½			25,000,000	7 cum	1¾ Q.	April, 1909
American Ship	59⅝	— ⅜	Oct.	13	7,600,000	4	1 Q.	June, 1908
American Ship, pr	109	—1			7,900,000	7 n. c.	1¾ Q.	Oct., 1908
Am. Steel Foundries(new)	54¼	+3⅞	Dec.	2	17,184,000		.....	.....
Am. Steel Foundries, pr	47½	.....			17,240,000	6 cum	1	Aug., 1904
Barney & Smith	30	.....	June	1	2,000,000	4	1 Q.	Sept., 1907
Barney & Smith, pr	94	+3			2,500,000	8 cum	2 Q.	June, 1908
Bethlehem Steel	31½	+1½	April	6	14,862,000		.....	.....
Bethlehem Steel, pr	61	+1			14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	43	+2	March	16	45,000,000*	3	1½ S. A.	Feb., 1909
Cambria Iron	45½	— ¾			8,468,000*	4	2 S. A.	Sept., 1908
Chicago Pneumatic Tool	24¾	.....	Feb.	15	6,145,800	4	1 Q.	Oct., 1907
Colorado Fuel	44⅝	+1¼	Oct.	18	34,235,500		3½	April, 1902
Crucible Steel	11⅛	+2⅜	Oct.	20	24,578,400		.....	.....
Crucible Steel, pr	78	+5½			24,436,500	7 cum	1 Q.	Mar., 1909
Empire Steel	5	.....	April	27	1,254,770		.....	.....
Empire Steel, pr	60	.....			2,500,000	6 cum	3 S. A.	July, 1909
Fay & Egan	90	.....	Feb.	18	1,000,000	7	1¾ Q.	Nov., 1908
Fay & Egan,pr	125	.....			1,000,000	7 cum	1½ Q.	May, 1909
General Electric	165½	+2	May	11	65,178,800	8	2 Q.	July, 1909
Harbison-Walker	20¼	+ ¼	Jan.	18	18,000,000		½	Oct., 1907
Harbison-Walker, pr	87	+2			9,600,000	6 cum	1½ Q.	April, 1909
International Pump	39⅞	+ ⅝	June	8	17,762,500		1	April, 1905
International Pump, pr	89¾	+ ⅛			11,350,000	6 cum	1½ Q.	May, 1909
Lackawanna Steel	48	.....	March	10	34,971,400		.....	.....
Lake Sup. Corp	24½	+1⅝	Oct.	6	40,000,000		.....	.....
New York Air Brake	86	—1¼	June	17	8,012,500	8	2 Q.	Oct., 1907
Niles-Bement-Pond	102	+2	Feb.	3	8,500,000	3	1½ Q.	June, 1909
Niles-Bement-Pond, pr	105	+5			2,000,000	6 cum	1½ Q.	May, 1909
Otis Elevator Co	56	.....	March	15	6,375,300		1½ S. A.	April, 1909
Otis Elevator Co., pr	99	.....			6,295,000	3 n. c.	1½ Q.	July, 1909
Penn Steel	68	+18	May	10	10,750,000		.....	.....
Penn. Steel, pr	116	+ ½			16,500,000	7 n. c.	3½ S. A.	May, 1909
Pittsburg Coal Co	11½	+ ⅜	March	9	28,104,600		.....	Nov., 1906
Pittsburg Coal Co., pr	47	—3			27,071,800	7 c.	1¾	April, 1905
Pressed Steel Car	43⅝	— ⅛	Feb.	17	12,500,000		3	Aug., 1904
Pressed Steel Car, pr	106½	+ ½			12,500,000	7 n. c.	1¾ Q.	May, 1909
Pullman	190	+2	Nov.	10	100,000,000	8	2 Q.	May, 1909
Railway Stl. Spring	46½	+3½	March	4	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	105	+ ⅛			13,500,000	7 cum	1¾ Q.	July, 1909
Rep. Iron & Steel	33	+1¾	Oct.	20	27,191,000		.....	.....
Rep. Iron & Steel, pr	107¼	+2¾			20,416,900	7 cum	1¾ Q.	July, 1909
Sloss-Sheffield	84	+1¼	March	10	10,000,000	5	1¾ Q.	June, 1909
Sloss-Sheffield, pr	116½	.....			6,700,000	7 n. c.	1¾ Q.	July, 1909
U. S. Pipe & Fdy	30	.....	June	23	12,500,000	2	½ Q.	Dec., 1907
U. S. Pipe & Fdy, pr	82	+2			12,500,000	7 n. c.	1¾ Q.	Sept., 1908
U. S. Steel	72⅛	+3¼	April	19	508,302,500	2 n. c.	½ Q.	June, 1909
U. S. Steel, pr	127¼	+1⅞			360,281,100	7 cum	1¾ Q.	June, 1909
U. S. Steel, 5s	106	+ ¼			463,798,000	5	5 A.	.....
Va. Iron, Coal & Coke	65	.....	Sept.	21	9,073,680		.....	.....
Westinghouse Elec	84¾	+ ⅜	June	16	27,173,200	10	2½ Q.	April, 1909
Westinghouse Air Brake	114	+ ½	Oct.	5	14,000,000*		2½ Q.	Oct., 1907

Par value of shares, $100, except those starred (*), $50.

Copper Stocks.

New York.—Amalgamated Copper closed 82⅜, a gain of 1⅛.

Boston.—Butte Coalition closed 24¾, a net loss of ⅜; Calumet & Arizona closed 103½, a net loss of ½; Calumet & Hecla closed 635, a net loss of 20; Quincy Mining closed 89, no change; North Butte Mining closed 52, a net loss of 5¼.

Financial Notes.

The Southern Steel Co. has sold to Ladenburg, Thalmann & Co., and Keene & Van Cortlandt, and some of their associates, $1,000,000 first and refunding mortgage 20-year gold bonds. It is understood that about half of the bonds will be placed in New York, and the remainder abroad.

It is understood that the International Steam Pump Co. is contemplating a bond issue of $6,000,000 or $7,000,000, and the plan under which the bonds will be issued will be ready in a short time.

Between now and Dec. 31, 1910, over $9,000,000 bonds of subsidiary companies of the United States Steel Corporation will fall due. The principal maturities are the Illinois Steel Co. debenture 5s, $2,872,000, Jan. 1, 1910; W. D. Wood & Co., first 5s, $2,000,000, May 1, 1910, and the De Bardeleben Coal & Iron first 6s, $2,718,000, Feb. 1, 1910.

AMONG MACHINERY MAKERS.

NEW YORK.

Large Purchase of Machine Tools by American Locomotive Co.

Office of THE IRON TRADE REVIEW, Room 1005, No. 90 West St., July 20.

What is undoubtedly the largest purchase of machine tools since the beginning of the depression was made during the past week when the American Locomotive Co. closed contracts aggregating in the neighborhood of $500,000. The list was sent out only a short time before the purchasing was done, and was at first reported to involve less than half that amount, this probably arising from the fact that for the most part it was circulated only among those concerns from which there was reason to expect purchases would be made. Last fall an extensive list was sent out by this company, but no buying resulted, and the list just closed covered not only these machine tools but also a wide variety of others intended to bring the equipment of the more important plants up to the standard demanded by increased business. Formal orders were placed last week. None of this buying is in connection with the plant at Gary, Ind., for which the American Locomotive Co. some time ago purchased a site of 130 acres.

The trade is also following reports that several automobile manufacturers in this territory will be in need of equipment in the near future. The Fiat Automobile Co., New York City, is to erect a suburban plant and has sent out a considerable list of tools in this connection. However, as the location of this plant is as yet undecided, it is expected that no buying will be done for some time. The Palmer & Singer Mfg. Co., New York City, has broken ground for an extensive plant in Long Island City, for which considerable equipment will probably be needed, as will also be the case with Brewster & Co., who have had plans prepared for a large factory building in the same locality. Largely through the activity of automobile manufacturers, the demand for smaller machine tools has been brisk for some months and in certain lines is now approaching normal. One western milling machine maker, through its local representative, reports its capacity sold for the current year and is now booking for 1910 shipment, although it is running night and day shifts and on the latter is employing more men than ever before. Another well known maker of milling machines is practically sold up for the current year. There has been a brisk demand for lathes of late and certain makers are running behind on deliveries.

Extremely heavy current purchasing is reported for the sugar mill industry, the buying season for which is now at its height and will continue for the next eight or 10 weeks. Several new plants are being built by interests which will do the bulk of their purchasing in this market, and the run of repair and replacement work is unusually heavy. A conservative estimate is that at least $2,000,000 will be expended for sugar mill equipment in this territory during the present season.

Contracts involving a large expenditure were awarded Thursday in connection with the extensive plant being erected in India by the Tata Iron & Steel Co., the engineering work for which is being looked after in this country by C. P. Perin, 2 Rector street, New York City. The contract for the bar mills went to Duisberg, a German concern, while that for the erection of two blast furnaces, with a capacity of 200 tons each, and considerable sheet work, was awarded to Kloenne, of Dortmund, another German interest. Although American manufacturers and engineers have submitted bids on every contract so far awarded, the only important order placed with an American firm so far has been one awarded to the American Locomotive Co., which will supply five large locomotives of standard Indian gage. This closes the bulk of the buying for the Tata works.

A meeting of the directors of the recently organized Southern Iron & Steel Co., principal offices of which are at Birmingham, was held in this city a few days ago, following which it was announced that improvements and additions to the works would be carried out at a total expenditure of $1,000,000. This will include the completion of the sixth open-hearth furnace, the remodeling of the wire rod mill, at a cost of about $250 000, and other additions for which no definite plans have been announced. President W. H. Hassinger was in New York during the week.

It is announced that the Somerville Iron Works, Somerville, N. J., will proceed at once to rebuild the pipe foundry which was destroyed by fire about 10 days ago. The plant manufactures soil and drain pipe and is owned by B. Lissberger & Co., 738 East Fourteenth street, New York City.

The Keokee Consolidated Coke Co., recently incorporporated with a capital stock of $3,500,000, succeeds to the interests of the Keokee Coal & Coke Co. and the Imboden Coal & Coke Co., both of which have maintained offices at 2 Rector street, New York City. It is announced that in addition to a battery of 525 coke ovens now in operation, the new company will immediately construct about 200, the foundations for which have been in place for some time. The company's mines, which will have a daily capacity of 4,000 tons of coal, are being more fully equipped, in which connection about 100 steel cars will be added. C. P. Perin, president of the company, is at the address given.

The local machine trade is following with interest the announcement that Brewster & Co., Broadway and Forty-seventh street, New York City, are to erect an automobile and carriage factory building on Long Island City at a cost of about $500,000. The structure will be six stories, principally of concrete and will measure about 200 x 350 feet. Stephenson & Wheeler, 18 W. Twenty-seventh street, are the architects.

WORCESTER.

Numerous New Plants and Additions —Proposed Consolidation.

Worcester, Mass., July 16.—The plant of the newly incorporated Standard Brass & Copper Tube Co., New London, Conn., is practically finished and partly equipped. Manufacturing will begin early next month.

Warner Bros. Co., Bridgeport, Conn., maker of corsets, clasps and waists, will spend about $300,000 in enlarging its plant. The power house will be of brick and steel, 94 x 107. A building to contain 48,000 square feet will be erected for the metal department, and a factory containing 30,000 square feet will be provided for the box department.

The plant of Pacific Iron Works Co., Bridgeport, maker of machinery patterns and models, will be erected. It will be of brick, 108 x 120. A brick boiler house 15 x 35 feet is also

planned, as well as changes in the present machine shop.

The Union Metallic Cartridge Co., Bridgeport, has awarded contracts for its nine-story shot tower.

The Carlyle, Johnson Machine Co., of Hartford, Conn., will move to Manchester, Conn. It makes friction clutches and marine reverse gears. Some special machinery will be added to its present equipment.

The Leeds & Catlin Co., Middletown, Conn., in the hands of receivers, is likely to have the state and federal receiverships merged, to simplify settlement of the company's affairs.

As has appeared in print, there is under consideration a consolidation of the Chapman Valve Co., of Indian Orchard, Mass., and the Pratt & Cady Co., of Hartford, Conn. The Chapman company was organized in 1874 and the Pratt & Cady Co. in 1878. The former is capitalized at $1,000,000 and the latter at $400,000. Both companies turn out the same kind of product, consisting of valves, water cocks, gages and similar iron and brass goods. At present the Pratt & Cady Co. employs about 375 hands and the assessed valuation of the whole plant is $172,800. It is said the Pratt & Cady people are cramped for room and would welcome the consolidation. Notices were sent out July 13 to the Chapman stockholders that Adolph W. Gilbert, president and general manager of the Pratt & Cady Co., would become the president and general manager of the Chapman company. Mr. Gilbert will combine the two offices which have been held by two men, Edward A. Carter, president and William V. Threlfall, manager. The matter of consolidating the two companies is now under consideration by the respective boards of directors.

The New Departure Mfg. Co., Bristol, Conn., maker of bells, cyclometers, faucets and other specialties, has decided to close its branch in Berlin, Germany, which has been running there for five years, and employing about 200 hands. The machinery and equipment will be moved to England and a branch established there in order to protect the British patents of the company. The need no longer exists to safeguard the German patents. The company employs about 600 hands at Bristol.

The New England Maintenance Co., Hartford, has recently incorporated for $50,000. It will make electrical appliances. The incorporators are Herbert C. Banks and Charles A. Hapgood, of Bridgeport, and William Knoblosh, of New York.

The Lombard Machine Co., Worcester, maker of woolen and worsted looms, is preparing to enlarge its plant with a brick building 50 x 125 feet. Capital stock will be increased from $25,000 to $100,000. Seventy-five more hands will be needed.

The Landers, Frary & Clark Co., New Britain, plans to increase its stock from $1,250,000 to $1,500,000. The company intends to take on new lines of manufacture and the new funds will be used in constructing a power plant and various other enlargements. Stockholders will have the privilege of taking on the new stock at par in ratio of one new share to five old ones. Par value is $25 and the old stock is now quoted at $80.

The Tobin Arms Co., Norwich, Conn., will be moved to Woodstock, Ont. A Canadian company is being organized, which will probably retain the present name. A new plant will be constructed operated by power from Niagara. The building will be brick, two-story, 45x100. It will be more than double present plant and the Tobin hammerless gun will be made, also likely other firearms and hardware specialties. The new company will have a capital stock of $150,000. Frank M. Tobin will be managing director of the new concern. The present company was organized in 1903 and has done a prosperous business.

MILWAUKEE.

Machine Tool Builders are Busy—Many Turbines Shipped.

Milwaukee, Wis., July 20.—With new plants and additions being erected in many parts of the country, machine tool builders in Milwaukee are finding themselves rapidly at a point where high records of previous years are being broken. Business is conservatively estimated to be 50 per cent better than a year or 18 months ago.

Allis-Chalmers Co., of course, is getting its full share of business in all lines of machinery manufacture, and has been shipping a large number of steam turbines, running from 500 to 3,500 kilowatts capacity, among the deliveries being to Bruch Electric Light & Power Co., Galveston, Tex.; Savannah Electric Co., Savannah, Ga.; Florida Mining Co., Mulberry, Fla.; Glenlyon Dye Works, Phillipsdale, R. I.; Willamette Valley Co., Springfield, Ore.; Pacific Mills, Lawrence, Mass.; Cia Electricia y de Ferrocarriles de Chihuahua, Mex., and Oshkosh Gas Light Co., Oshkosh, Wis. Among the largest orders under way are from Merchants Heat & Light Co., Indianapolis, 2,000 kilowatts; Neenah Paper Co., Neenah, Wis., 1,000 kilowatts; Cleveland Cliffs Iron Mining Co., Ishpeming, Mich., 2,000 kilowatts; Royal Weaving Co., Pawtucket, R. I., 1,500 kilowatts; Northwestern Gas & Electric Co., Walla Walla, Wash., 1,000 kilowatts; Wilkesbarre Gas & Electric Co., Wilkesbarre, Pa., 1,500 kilowatts; D., L. & W. R. R. Co., Scranton, Pa., 2,000 kilowatts; Colorado Springs Electric Co., 1,500 kilowatts, and others of lesser capacity.

Most of the important machinery and steel manufacturers of Milwaukee have voluntarily offered to assist the special legislative recess committee on industrial insurance to arrive at a satisfactory conclusion by opening their works and books to the members of the committee for study and investigation. The Allis-Chalmers Co. is one of the few concerns that maintains its own system of benefits, and its records will be of great value in this work. The company will be one of the first to enter into any industrial insurance plan under state patronage, if it is at all reasonable.

A trust mortgage of $3,500,000 given by the National Enameling & Stamping Co., of Milwaukee, to the Central Trust Co., New York, and Charles H. Huttin, trustees, has been filed in Milwaukee. The trust deed is to redeem bonds outstanding on the $2,500,000 issue of bonds in 1901, amounting to $750,000, and to cover other floating liabilities. The mortgage covers "refunding, first mortgage, real estate, sinking fund, 20-year, and 5 per cent gold bonds" issued by the company previously.

The Freeland Steel Tank Co., of Portage, Wis., formally commenced operations on July 11. The Milwaukee road has provided good sidetrack facilities. The company has for many years operated at Sturgis, Mich., but when the plant was destroyed by fire, moved to Portage.

The LaCrosse (Wis.) Plow Co. is working full time to supply orders, which have depleted stocks on hand.

CINCINNATI

Machine Tool Makers Taking On As Many Machinists as Can be Obtained.

Office of THE IRON TRADE REVIEW,
First National Bank Bldg., July 20.

The tone of steady improvement in the demand for machine tools continues to reflect the situation from the manufacturer's standpoint. The shops are steadily adding to their working forces and in fact are taking on men as fast as they can be se-

cured. The increase in demand is more noticeable in the lighter lines of machines than the heavier types, a fact which has been noted right along, but the makers of heavier types are now receiving more orders, increasing their working forces, restoring wages and putting the shops back to full time. Occasional purchases of shop equipment in the way of machines are also being made and the purchasing departments of machine tool plants are buying more heavily than at any time for many months. The present improvement is universally regarded as permanent and there is no hesitancy on the part of shop managers to make stock to a reasonable degree and the policy of retrenchment and operating close to current demand is giving way to more liberal operations due to the feeling of confidence that has been restored by the increase in orders.

The Acme Machine Tool Co. is now running and will have machines on the market by the first of August. The first product of the shop will be a 2¼-inch screw machine.

The Cincinnati Planer Co., which reduced wages during the depression, has now restored the old scale and has increased its working hours to nearly full time.

The Cincinnati Lathe & Tool Co. received orders in the first half of July equal to 60 per cent of a normal business, which means that if business holds up during the month, the company will do a normal business or more in July.

The King Machine Tool Co. is busy on orders and reports the outlook encouraging.

The Kern Machine Tool Co. is busy and has reduced stock considerably in the recent past. A new Brown & Sharpe grinding machine has been installed in the shop recently.

The Schumacher & Boye Co. is enjoying a good run of orders and is increasing its working force as rapidly as men can be secured.

The Cincinnati Milling Machine Co., which has been one of the busy plants through the depression, is now trying to run nights in order to catch up on deliveries.

Greaves & Klusman had an excellent business in June and have received some orders in the present month, but July has not equaled the June record so far with this concern.

The Fosdick Machine Tool Co. has received enough orders to put the shop in good condition and regards the outlook as encouraging.

DODGE MFG. CO. ADDITIONS.

The Dodge Mfg. Co., manufacturer of machinery and appliances for the mechanical transmission of power, is making extensive additions to its plant at Mishawaka, Ind. The first addition is being made to the south or main machine shop, the building under construction being 280 by 122 feet. The new structure will resemble the old shop, but the side bays will be higher, to accommodate a second floor or gallery. The frame work is of steel with the walls of Michigan sandstone brick. The supporting columns rest on concrete foundations, this same material being used for the floor. There will be 158 windows for light and ventilation. Metal sashes take the place of the old-time frames. The whole building is absolutely fireproof. Two electric cranes of the Whiting and Niles types, 25 tons and 10 tons respectively, will serve the main middle bay, where all large machines are placed and all heavy work done. In side bays, several lighter electric cranes will handle the smaller work. With the addition the total length of the shop will be 585 feet, making the longest runway for traveling cranes in that section of the country.

The upper floor of the extension will be used in the manufacture of split friction clutches, the present department for that work, although covering a space of 12,000 square feet, being badly overcrowded by reason of the demand for these clutches. Electric elevators will be installed between the two floors.

The progress of the Dodge Mfg. Co. has been remarkable. From a little saw mill it has become a very large plant, covering almost 65 acres, and giving employment to 2,000 skilled workers the year round.

New Thomas Stack.—No. 3 furnace of the Thomas Iron Co. at Hokendaqua, Pa., which went into blast early in July, is a new stack in every particular, having been entirely rebuilt during the past few years. From time to time, changes have been made, new engines, steel bins, skip hoist and hot blast stoves being installed, until at the present blowing in not one vestige of the old furnace remained.

Increasing Billet Capacity.—The Jones & Laughlin Steel Co. is making a considerable increase in the billet capacity of its South Side works, Pittsburg, by the installation of an additional Morgan continuous billet mill and larger hot bed. The increased output to be derived from the improvement will be in small billets from 1½ to 3 inches square. The new mill will be driven by a cross-compound vertical Corliss steam engine, which is yet to be placed. At its South Side works, the Jones & Laughlin Steel Co. now has under way, as previously stated, experiments with the duplex process of steel making.

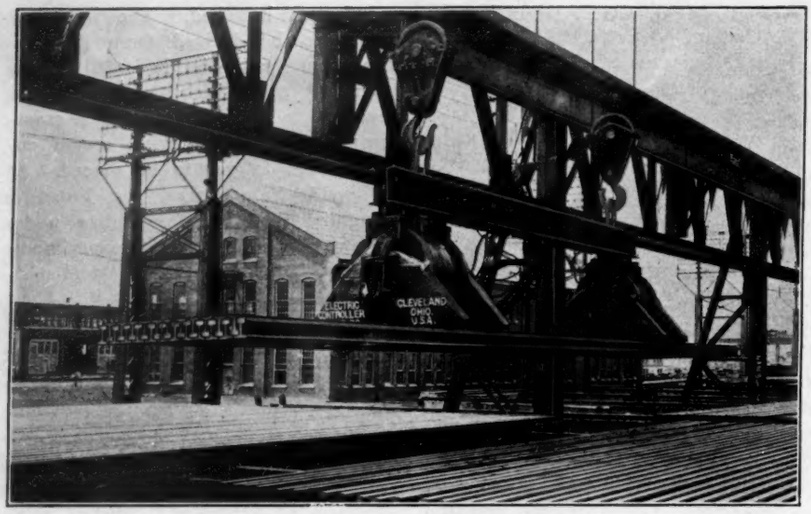
WILL BUILD BLAST FURNACE.

The Ruby Mountain Iron & Furnace Co., St. Louis, Mo., advises regarding its incorporation, that the company was formed to mine ore, erect smelters, build and operate railroads for the handling of crude and finished products. Plans have been so perfected that within 30 days' time the output of the iron ore will reach 500 tons per day, 56 per cent ore. The company states that it has sufficient ore properties to treble its output within a year, and that it contemplates the erection of a blast furnace at some point in Wayne county, Mo., on a site to be selected at a later date. Also, that it will soon be on the market for light steel rails and 12 and 15-ton locomotives.

Sloss-Sheffield Activities.—J. C. Maben, president of the Sloss-Sheffield Steel & Iron Co., has gone abroad for two months. Before sailing he made the statement that the Sloss-Sheffield plant, with five furnaces in blast, is producing about 32,000 tons per month, a rate of output which has been maintained for several months, yet has only 8,000 tons in stock and is sold up for the next four months. William B. Clyde, formerly president of the Clyde Steamship Co., has been elected a director of the company to succeed the late F. P. Olcott.

Making Progress.—Michael Blake, one of the receivers of the J. B. & J. M. Cornell Co., structural iron and steel contractors of New York City, states that favorable progress toward reorganization is being made and that this can probably be completed by Aug. 20, the date set by the court for an accounting. The receivers have recently booked considerable business.

Richard Mine Active.—Richard mine of the Thomas Iron Co., located near Wharton, N. J., which has a rated capacity of 100,000 tons annually, is operating to its maximum capacity, and has been doing so for a considerable time.



LIFTING MAGNETS HANDLING LOCKED SECTIONS OF RAILS.

RAIL HANDLING MAGNETS AT GARY.

During the past few years the saving that can be accomplished by the use of lifting magnets, has been generally recognized and many new applications of magnets have been made. The Electric Controller & Mfg. Co., of Cleveland, is the pioneer in this field and has not only been the first to introduce improvements in design, but also to design and apply new types of magnets to new kinds of service.

Such an application requiring a new design of magnet, is the handling of the entire output at the immense rail mill of the United States Steel Corporation's plant at Gary, Ind. This mill is of the most modern design in every respect, and electric power has been used throughout, even to the driving of the rolls by 6,000-horsepower motors. The handling of the finished rail by electric power through the use of lifting magnets, was therefore a logical conclusion, providing a successful magnet could be made. The handling of the rail output by means of magnets was particularly desirable from the following considerations:

First—Sufficient labor alone could be dispensed with to make the application commercially attractive.

Second—A large saving in time of handling would be effected.

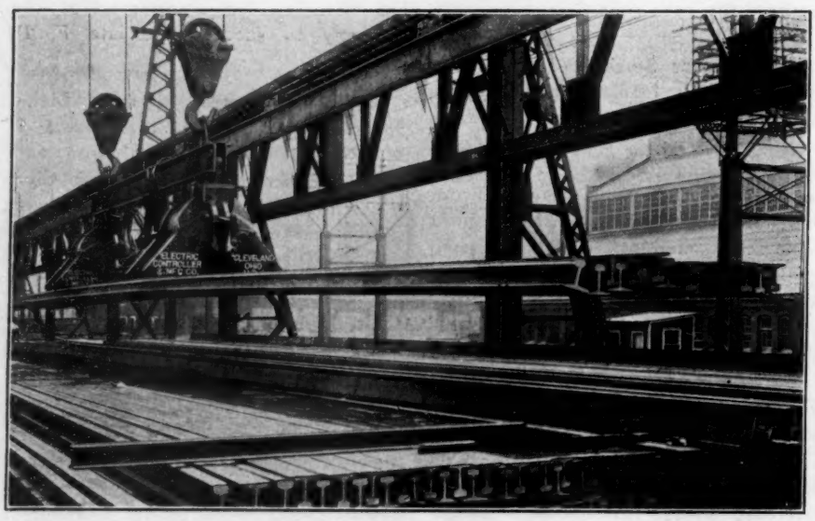
Third—Very much less timber spacing material was necessary in loading.

Fourth—There being no possibility of bending the rail when loading by magnets, loss on this score would be eliminated.

While it is desirable from the standpoint of the rail mills and railroads to ship rails in locked sections yet this is an arrangement of rails which is particularly difficult to handle with a magnet.

The difficulty arises from the fact that the top layer of the rails practically short circuits the magnetic field and none but a very powerful and carefully designed magnet would have sufficient strength to penetrate the top layer of rails and lift the bottom layer.

The magnets which were furnished by the Electric Controller & Mfg. Co., have been very successful and have lifted not only locked sections of 33-foot rails but have also successfully lifted locked sections of 60-foot rails with an aggregate load of 15 tons.



LIFTING MAGNETS LIFTING RAILS AT GARY.

TRADE PUBLICATIONS.

FUEL ECONOMIZING.—"How to Save Coal" is discussed from the point of view of recovering waste heat in the chimney flue gases in a neat little booklet which is being distributed by The Green Fuel Economizer Co. of Matteawan, N. Y. The booklet also describes the construction of the Green economizer, illustrating the extended top header, the new bottom header especially designed to avoid choking from soot, the new sectional covering and other improved features.

ROLLS.—The Seeman, Sleeth Co., Pittsburg, Pa., has issued a 62-page 8 x 11-inch catalog, descriptive of the various types and forms of rolls which it produces. The company confines itself to the production of rolls and pinions exclusively, both chill and sand, in semi-steel, and the catalog contains a long list of users, in which will be noted some of the most prominent mills in this country and several abroad. The catalog itself is deserving of special mention and is of the very highest order of catalog work. The illustrations are very fine and the press work throughout of the best. In fact, it is almost a story without words.

SMOKELESS COMBUSTION.—The Lee Smokeless Combustion Co., 20 Vesey street, New York, has issued a 32-page catalog descriptive of their stoker and furnace setting, for which smokeless operation is claimed. Considerable space is devoted to biography and portraiture, and some of the features of the stoker will readily be recognized.

VISES.—The G. M. Yost Mfg. Co., Meadville, Pa., has issued a booklet descriptive of vises made by them, including workers', machinists' and blacksmiths' vises, of both the ordinary and quick-acting types, in fixed and swivel base types.

PLATE WORKING TOOLS.—Wickes Bros., Saginaw, Mich., who have long been known as builders of bending rolls, have added a number of other tools to their line, and have issued a well gotten up, 40-page, 9 x 12-inch catalog, descriptive of their horizontal and vertical plate bending rolls, punches, shears, plate planers, annealing furnaces, flanging presses, riveters, etc.

TOOL STEEL.—In a neat 78-page 4 x 6-inch catalog, the Halcomb Steel Co., Syracuse, N. Y., sets forth the various grades and brands of steel made by it, and the purposes to which they are adapted. The book gives very complete instructions and suggestions for the manipulating of steel in order to secure the best results.

PNEUMATIC TOOLS.—The Detroit Pneumatic Tool Co., Detroit, Mich., has issued a 28-page, 6 x 9-inch catalog descriptive of its line of pneumatic riveting, chipping and calking hammers and holding-on tools, air hoists, sand rammers, etc.

DARK CARBON STREAKS IN SEGREGATED METAL IN SPLIT HEADS OF RAILS[1]

By P. H. Dudley.

I have in former papers called attention to "Split Heads" in rails. See Vol. V, page 165, and Vol. VII, page 54 of the Proceedings of the American Society for Testing Materials.

"Split head" has been distinctly recognized in the nomenclature of rail failures by the American Railway Engineering and Maintenance of Way Association and is thus defined:

Fig. 1.

"This term includes rails split through or near the center line of the head, or rails with pieces split off the sides of the head. When this term is used it should be further defined by stating whether it is or is not accompanied by a seam or hollow head." This was intended to be generic rather than specific as to types.

Fig. 1 shows a transverse section of the generic type of "split head" of rails. The spreading, wedge-shaped piece of metal above the opening in the head is indicated by the cracks in the bearing surface over the split. The metal of the wedge contains slag inclusions—manganese silicates as deoxidation products—from the chemical reactions of the recarburizer to purify and make the steel while the deoxidation products did not have time to escape before the ingot was teemed into four length ingots for 100-pound rails. The quality of the steel and the soundness of the ingots have been improved the past year or so by requiring more time for the deoxidation products to escape from the steel before teeming the ingots.

Fig. 2 shows in part by the dark discolorations an end progressive detailed fracture of the web and base from the top of the web downward after the head had split and separated at the junction of the web, also as a detailed fracture, the head separating from the web the rail, reducing a single strong section into two weak sections, and failure is certain under a few thousand wheel loads, each extending the progressive fracture. The head was broken into several short pieces by the wheels of the train which was derailed. This was called a "piped" rail by the trackmen, but the fracture shows the web was neither split nor contained a trace of blow holes or shrinkage cavities at this location. This is not always the case.

Fig. 3 includes the same piece of web, base and head as Fig 2, with the added portion of the broken piece from the head detached by the wheels. The one-half piece of the head projecting beyond the web contains a streak higher in carbon than the adjacent metal above or below it.

Fig. 4 is the inner face from the same "split head," which indicates a dark carbon streak near the middle of the head.

Fig. 5 is also the inner face from the same "split head," which was smoothed and etched to develop the dark carbon streak near the lower side of the head. This streak was practically in the same position as the one shown in Fig. 3, but all of the pieces of the head not being recovered the fact could not be established whether it was or was not a continuation of the same streak. The fractured surface of No. 5 when received was so recent that the metal was discolored only and indicated that it had split in comparatively solid but segregated metal, confirming observations previously made and published. There were some indications of streaks on portions of the surface, as proof that something had risen in the hot metal of the ingot before it had set, leaving the trail of its passage. This evidence is found frequently upon the fractured faces of the "split head" and is doubtless called a true seam by many observers. It seems to be the demarcation line between the rising interjected metal and that of the ingot and easily becomes a cleavage plane of weakness. The steel did not set "dead," but the top of the ingot rose, forming a horn or horns with ejections of slag and impurities. An ingot with horns was cut and decided streaks found, while another was rolled into rails and sections and cuts made of them which contained many dark streaks.

I prepared the surface of Fig. 5 by hand and saw at once that the streak was of harder metal than either side, and that the bulk of the so-called segregation had detached itself from the other half of the split head. The etching defined a well developed dark carbon streak though I had cut away over half of its thickness in surfacing the piece as shown. Examination of the streak under the microscope indicated well defined longitudinal cracks, and that the metal was checked or shattered transversely in service. The scleroscope measured a hardness from 0.57 to 0.60 for the streaks in comparison with 0.45 to 0.47 for the mass of the metal in the head.

Fig. 6, the same piece as Fig. 5, and 1 in the illustration, shows where the dark carbon streak was planed out for chemical analysis, which by com-

Fig. 2.

[1]Paper presented at Atlantic City meeting of American Society for Testing Materials, June, 1909.

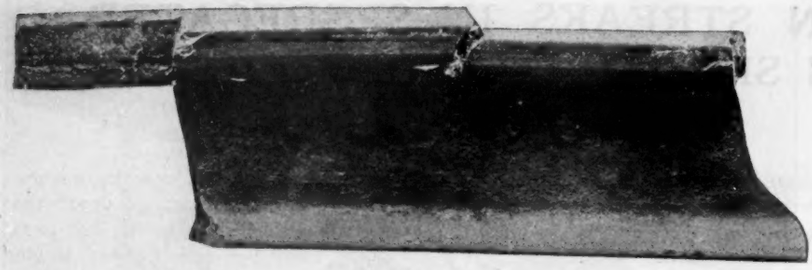


FIG. 3.

bustion was 0.78 while 2 shows where the steel was taken for the ordinary content of carbon, which was 0.61 by combustion and 0.49 by color. The streak was cut out ⅛-inch wide and 1/16-inch deep to obtain sufficient steel for a combustion test. These chips contain some material which was not colored, approximately one-third to one-half of the steel, the actual carbon being higher than the average reported. The highest content so far found in these dark carbon streaks in rails is 1.61 per cent by combustion. The carbon in the strip marked 2 in Fig. 6 by combustion was 0.61 and by color 0.49; the ladle tests of this lot of rails manufactured in 1903 ran from 0.43 to 0.48 by color. The chemical analysis of the metal in the rail compared with the ladle tests indicated segregation of the setting steel, which is further augmented by the interjections of the dark carbon streaks. The sharp demarcation between them and the adjacent metal surrounding them precludes the hypothesis that these are the nuclei of the so-called segregates which, from the richer carbon content, cooled last. There is being accumulated samples which indicate a dissemination of the higher carbon to the adjacent metal, by the heat and work of fabrication. The rail did not fail until five and a half years' service in the main line tracks, although many rails from the same lot failed as "split heads" after the second or third year of service. The rails of this brand were never lettered to mark their position in the ingot and while uncertain, there are many indications it was below the "A" rail of the top of the ingot. "Split heads" have been found in all rails of the ingot, though most frequent from the upper portion.

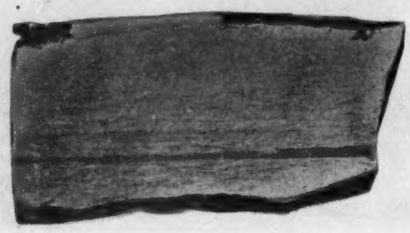


FIG. 5.

Fig. 7 is the same piece as Figs. 4, 5 and 6 after a reduction of 3/32-inch in depth of the face which shows slight impurity streaks, but not necessarily as high in carbon as the one cut out for analysis.

Fig. 8 is a piece of the "split head" from the "B" rail of a 1903 100-pound "Dudley" section in a four-rail ingot. The rail was removed from the track as soon as indications of failure were noticed, for the purpose of securing as recent surfaces of the progressive detailed fracture as possible. There was on the fractured surfaces of the faces of the "split head" slight appearances of streaks. These, upon smoothing and polishing the specimen, developed near the upper surface of Fig. 8 as a faint dark carbon streak. Immediately under the bearing surface where the metal had spread under the passing wheel loads two minute dark streaks may be seen. These did not show a high content of carbon. The faint broad carbon streak gave the indication of increased hardness by the scleroscope of 0.57 to 0.60 compared with 0.45 for the ordinary metal.

FIG. 4.

Fig. 9 is the same piece of steel showing by the figures 3 and 4 where the portions were planed out for analyses. Cut 3 contained 0.72 of carbon by combustion and 0.61 by color. The metal below Fig. 4 shows that it was a mass of carbon in the steel, a broad streak turned from the web by the rolls. By combustion this showed 0.85 and by color 0.71. The under surface of this piece was so high in carbon that it detached quickly from the head of the rail in the track; a usual type of fracture. It is not intended to convey the idea that all of the dark streaks found in the heads of these segregated rails will show high percentages of carbon, as in many instances its diffusion by the heat and work of manufacture is clearly evident. There are also oxides and other impurities which seem to be included in a central strip, the nature of which is under investigation. Finding these dark carbon streaks generally in the "head" shows that it is something which is injected irregularly into some, but not all, of the ingots of each heat of steel. They are not found in all rails but only in occasional rails. We are, therefore, not dealing with a constant segregation but one of considerable irregularity.

Examination of the stools upon which the ingot molds set shows that after teeming 100 to 120 heats they have lost oftentimes from 30 to 40 pounds of metal. The molds are cut out by the stream of hot steel and the cast iron enters the fluid steel which is being teemed. The cast iron is not cut out of the stool under each ingot of every heat. It seems to occur when the steel is high in temperature and in falling from so great a height (6½ to 8 feet) it strikes the bottom of the stool with great severity and the ingots stick to the stool. The men teeming the ingots sometimes raise the stopper of the nozzle slightly to allow a little steel to fill the bottom of the mold before opening the nozzle full head. This checks the rapid cutting out of the stools, though after a number of heats have been teemed some of the cast iron of the stool becomes granulated and a portion is detached by the bottom of the ingot when stripped, if not by the falling stream. A new stool the first heat often loses two or three pounds of metal, either cut out by the stream or from the hot ingot sticking to the stool.

FIG. 6.

Examinations were made of ingots from which there were not any traces of cast iron cut out by the falling stream in teeming the ingots of that particular heat, and dark carbon streaks were not found in the rails from those ingots. Then a series of tests were made of casting small test ingots of eight to 10 pounds weight, the same as those used for determining the chemical contents of the steel. The small quantity of steel poured from a hand ladle in the small ingots rarely cuts out any of the cast iron and those ingots are free from dark carbon streaks. Then the experiment was made of introducing an ounce or ounce and a half of No. 1 iron drillings in the small eight-pound test ingot. These ingots were then cut in half and polished, and dark streaks were found in the steel. These being tested by the scleroscope gave a greater hardness than the adjacent steel surrounding it by eight to 10 points. Small test ingots have also been made

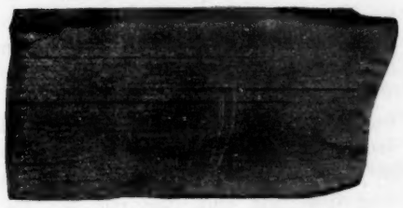


FIG. 7.

in which about one ounce or one and one-half ounces of cast iron from a broken mold were used. These pieces were put into the small test ingot after about 1 inch of metal had been poured into them. One ingot was cut and traces of the dark carbon streaks found in it. Another ingot with about the same quantity of cast iron from the mold was drawn out in a bar one inch square and about 30 inches in length, this was then cut in half and polished and the dark streaks were found in the interior of the bar. The cast iron caused the top of the test ingot to boil and form horns, as is often observed with the large ingots. The heat and work upon this small bar disseminated the carbon from the iron in streaks so the total quantity at any one point is small. It is well diffused each side of the small streak. The scleroscope shows a hardness of about 0.33 to 0.35 for the bar and where the streaks of carbon are the heaviest the hardness runs from 0.43 to 0.48.

The segregation of the ingots follow laws which have been observed to some extent but it is considered remarkable that in rail ingots the manganese only segregates to a small extent. The equivalent increase is not found in the carbon streaks for the possible reason that the cast iron only contains about one-half of 1 per cent of manganese, and this would not increase the content of manganese only to a slight degree. I am now studying under what I consider the normal segregation of an ingot which shows a fairly uniform segregation of all of the elements. The small quantity of material in the carbon streaks does not usually furnish sufficient for analyses of all of the elements. There is an increase in the segregation of the phosphorus which can partially be explained by the content in the cast iron, and also with the sulphur where it is injected into the steel. The accidental carbon streaks in rail steel render it difficult for the steel companies to prepare standards of uniform carbon content. The drillings taken from a bar in which these streaks are found will show decided irregularities under chemical analyses, even when drillings are taken from the same holes. It is difficult to make a uniform sample owing to the fineness of some of the material, as an average sample is not obtained. With the facts known in reference to the effect of these carbon streaks in the steel it will be better to take samples from ingots which have not taken up any iron from the stool and these can be used to produce a more uniform standard. The carbon standards by color differ to a considerable extent at each mill and the values are not the same, which is partly due to the irregularities of the carbon streaks which occur in the steel.

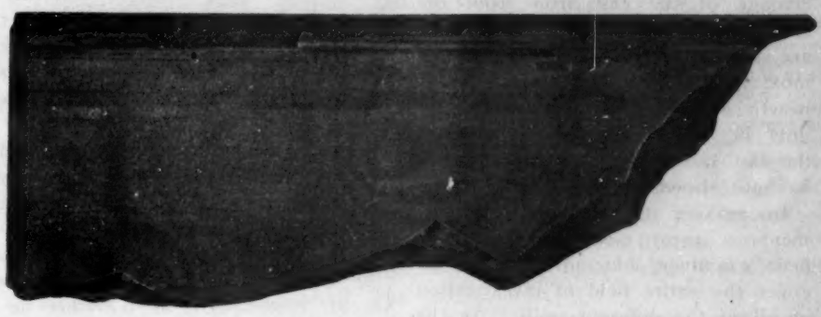


FIG. 8.

The entire question of segregation will have to be carefuly reconsidered and the tests should be made upon steel which has not taken up any of the iron from the ingot molds or the stool.

The different results obtained by persons studying segregation can in a measure be explained by either the absence of the carbon streaks in the steel or their presence. It requires but a small amount of cast iron, which contains 4 to 4.5 per cent of carbon to inject a large quantity in the interior of the steel. There are several instances in which the iron has not risen much above the crop of the bottom rail of the ingot. In other cases these streaks are found in the rails above the bottom, and sometimes they are only in the upper rails. The latter will occur when the steel is hot and there is ample time for the carbon to rise in the metal and in ingots which boil, the carbon

FIG. 9.

streaks and segregation is more decided than when the steel sets "dead."

The introduction of any deoxidizer which absorbs more of the oxygen of the steel and causes it to set more quietly will reduce the natural segregation of the metal. I have made 17,000 tons of rails with ferro-titanium and in many of them there is not the slightest trace of carbon streaks, but if there is an ingot of a heat which has cut out a portion of the steel the carbon streaks appear.

Those rails which contained a percentage of the cast iron from the stool in the form of carbon streaks are among those which have broken most frequently in the track. Open-hearth steel from bottom-poured ingots in which there is not any of the cast iron cut out from the stools, has not shown carbon streaks.

In making these general experiments a great many samples have been examined, but not sufficient to cover the entire field of investigation at all of the different mills. As the subject is one which has heretofore not received any consideration it will be evident that the investigation must be large and sufficiently comprehensive to cover all of the possibilities which may occur in the teeming of the ingots.

The present attitude of the steel makers in reference to the consumer is that when facts are proven which have contributed to the unusual failures in rails they are ready to take steps to reduce these possibilities in the future.

One eminent maker, after examining several of the dark carbon streaks in rails, said that there was little question in his mind but what a great many of the difficulties attributed to segregation are at least augmented by the cutting out of the cast iron from either the stool or the ingot mold.

The Peninsular Milled Screw Co., Inc., Detroit, advises respecting its recent disastrous fire which practically destroyed its entire plant and contents, that before sunrise it had taken a lease on the plant which it now occupies, where it is running in a small way. It is estimated that when the machinery, most of which is in transit, arrives it will be running larger and stronger than ever. It is making these extra efforts not only in behalf of itself, but also on behalf of its customers, very few of whom will be disappointed to the extent of 30 days.

COMPARISON OF LOCOMOTIVE BUILDING METHODS IN THE UNITED STATES, GERMANY AND FRANCE.*

By Marcel Bloch.[1]

This system, although greatly in vogue in the United States, has many disadvantages, such as the continual discussions which arise, the intervention of the unions, etc., which render its application rather difficult, and in the locomotive business, in which standard time is easily determined, preference is shown for piece work, or "contractors." The latter are generally either foremen or other men in the confidence of the company to whom the works pay fixed prices for the various parts. The contractor attends himself to enrolling the required number of men and pays them as he deems best, either by piece work or per day. This system is very much in favor at the Baldwin Locomotive Works of Philadelphia, and is also used by the American Locomotive Co. at Schenectady. It is rather difficult to obtain much information about the contracts between employers and contractors, as the details of such are kept secret as much as possible. This system has the disadvantage, no doubt, of producing an inferior grade of workmanship, and would require very careful inspection and supervision. The latter is generally rather scarce in American shops, where everything is subordinate to the rapidity of execution. But the rapidity of contract labor is certainly very great.

The workmen, as stated, specialize as much as possible in one kind of work, or even on a single machine. But it must be said that in America the increase in the efficiency of a workman does not to the same extent as in Europe cause an attempt on the employers' part to diminish the bonus allowed to the workman. In the United States, where labor is high, it is particularly desirable to increase every man's efficiency as much as possible and derive all the possible benefit from this increased output. This tendency has been noted by most Europeans visiting America, particularly the English Mosely Commission (1903). Mr. Barnes states* that in the Westinghouse Pittsburg shops a man earning 26 cents per hour can easily increase his pay to 40 cents; from actual observation, it appears that bonus work generally corresponds to a 33 per cent increase in salaries, while in many cases observed recently this increase has been as high as 50 per cent.

In Germany the ordinary workman has a very different character from the American. The Berlinese frequently change their occupation and are generally of wandering disposition. The large number of different industries in Berlin make them much harder to please than their qualifications justify. The number of parts rejected on account of carelessness of workmen is very high in the Borsig Locomotive Works, at Tegel, near Berlin, and shows conclusively that the average German mechanic, although reputed, is greatly inferior to the French and American. He is generally well paid, but the tendency is to decrease the standard price paid for parts as the output increases, and this is certainly no incentive for him to work rapidly.

The French workman, much more skillful, is placed in the same conditions. French companies generally limit to a certain sum the amount of bonus their men can earn, and this limitation has caused, in the North of France particularly, a tendency in the labor unions to compel their members not to work above a certain amount, in order that the companies may find no pretext to lower their rate schedules, or to obtain from their men more than a certain amount of "bonus" work, usually between 30 and 40 per cent. These conditions are responsible for the low output and tardy development of French shops. Indeed, some companies have entirely suppressed piece work on this account.

There is another practice in American shops which greatly helps rapid production; with the possible exception of some automatic machines the American shop man only runs one machine. American engineers claim that they save considerable time thereby. It is not to be questioned that the French shop practice of having one man run two machines, or two men three machines causes considerable loss of time. While it is true that these losses are not noticeable at once, and that it does not often happen that both machines are idle at the same time, there is no doubt that the men do not obtain the maximum results the machines are capable of producing. It is impossible to follow and observe the tool progress. It often happens that a man finishes the work on two machines together, and the result is that one of them remains idle while he fixes a new part on the other. While there are some advantages in this practice, and at least one-quarter is saved on the pay-roll, when the men are paid by the day, the American system makes

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*Translated from the *Revue Generale des Chemins de Fer*, by the *Railroad Age Gazette*.

[1]Motive power inspector of the Paris-Orleans railway.

*See J. Barnes' report on Mechanical Shops.

a larger and quicker output possible, and is therefore more economical in the long run.

Results.

The natural results of American shop practice, where the machines are worked to their utmost capacity and frequently renewed, and where labor is organized so as to place speed above everything else, are, of course, in the locomotive industry, a much more rapid execution than can possibly be obtained in Europe.

On two different occasions the Paris-Orleans Railway ordered in America locomotives of French design throughout; 20 10-wheelers from the Baldwin Locomotive Works in 1906 and 30 Pacific type from the American Locomotive Co. in 1908. The former were ordered in December, 1906, and delivered in June, 1907, while the latter were ordered in February, 1908, and delivered in August, same year. In both cases six months sufficed to build locomotives of entirely new type, with which the shop men were totally unacquainted.

In Germany a number of consolidated locomotives were ordered from the Borsig Works. Orders for raw material for these engines were placed in July, 1907, yet the first engines were not delivered until April, 1908, five per month being shipped thereafter, and the last locomotive was not completed until October, 1908. It therefore took 14 months to build these engines, which was a much longer time than had been stipulated in the contract.

The results obtained in France when normal business conditions prevail are comparable to those obtained in Germany; but when the works are crowded it is impossible to obtain any but much longer deliveries. For instance, an order placed in France in January, 1907, was not delivered until December, 1908—viz., 24 months after signing of contract. Another order for 20 locomotives, placed in March, 1906, was not shipped until January, 1908, for the first locomotive and June, same year, for the last, a total delay of 27 months for the execution of this order.

Cost and Price.

Analyzing the cost of locomotives is generally very difficult. It is rarely possible to obtain the elements on which a price is based, and manufacturers naturally do their best to keep this essential part of their business as secret as possible. For an outside party to establish a cost is generally guesswork for the greater part, and only approximate results are obtained, chiefly by comparison and a careful study of the methods used in diferent countries.

The chief factors of a cost list are labor, material and general expense factor.

The selling price is obtained by adding the profit, or margin, to the total estimated cost.

Labor.

The writer has shown in this paper the radically different conditions between American and European labor. As a result the rate of comparison in the two continents differs greatly.

The following table shows the average pay of American, German and French labor:

	United States.	Germany.	France.
Boiler maker	$2.80 to $3.10	$1.50 to $1.75	$1.20 to $1.50
Machinist	2.20 to 2.80	1.25 to 1.40	1.00 to 1.30
Assembler	2.50 to 2.80	1.20 to 1.40	1.00 to 1.40
Helper	1.50 about	.80	.60 to .80

To these salaries must be added a bonus, often exceeding 50 per cent, in America, but between 30 and 40 per cent in Europe. The average ratio between European and American salaries is between one-third and one-half. The average German salary is slightly greater than the French. In the large cities a 25 per cent difference is at times observed, which may be accounted for by the difference between the mark and the franc.

Material and General Expense Factor.

In France there is no metal market, hence no material price list, as in Germany and America, and therefore any estimating based on the figures contained in these market reports would be impossible. It is true that these market prices are often ignored totally, private contracts being made between manufacturers and builders on bases often different from the quoted market price. It is extremely difficult, unless the builders are willing to divulge the information themselves —which they are very reluctant to do —to give any reliable details on the average cost of materials.

The writer has, however, been able to reach some satisfactory results by comparing costs of locomotives built by the railway companies in their own shops, both in America and in France, which are given below.

These tables are based on two simple expansion 2-8-0 consolidation type locomotives, weighing 87 and 93 tons, respectively, built in America and on two French freight locomotives—namely, one consolidation and one 4-8-0 type, both being four-cylinder compounds:

COST OF A CONSOLIDATION SINGLE EXPANSION LOCOMOTIVE OF AMERICAN DESIGN BUILT IN THE UNITED STATES IN 1907.

Weight in working order: 87 tons.
Weight empty: 82 tons.

	Labor.	Material.	Total.
Boiler shop	$1,047	$2,102	$3,149
Tank shop	584	1,811	2,395
Brake	205	644	850
Wheels and axles	150	1,550	1,705
Patterns, tools, etc.	3,488	5,403	8,891
General expenses	2,533	417	948
	$6,007	$11,827	$17,848
Overhead charges			1,534
Cost per locomotive and tender			$19,382

Cost of locomotive alone, $16,987.
Cost per pound, $0.094.

COST OF A CONSOLIDATION SINGLE EXPANSION LOCOMOTIVE OF AMERICAN DESIGN BUILT IN THE UNITED STATES IN 1908.

Weight in working order: 93 tons.
Weight empty: 88 tons.

	Labor.	Material.	Total.
Boiler shop	$1,046	$2,292	$3,337
Tank shop	639	1,340	1,977
Brake	189	615	804
Wheels and axles	166	1,593	1,739
Patterns, tools, etc.	3,500	6,427	10,127
General expenses	800	400	1,200
	$6,340	$12,667	$19,184
Overhead charges			2,200
Cost per locomotive and tender			$21,384

Cost of engine alone, $19,407.
Cost per pound, $0.107.

Cost of a four-cylinder compound consolidation type French freight locomotive of French design.

Material	$10,693
Patent royalty	10
General expenses	1,069
Drawing room	59
Labor	3,508
Overhead charges on labor (100 per cent of labor)	3,508
	$19,847

Cost per pound, $0.126.

Cost of a four-cylinder compound 4-8-0 type locomotive of French design, built in France.

Material	$12,142
Factor	655
Labor	3,175
Overhead charges on labor (70 per cent approx.)	2,064
	$18,036
Deduct value of scrap	807
Net cost	$17,229

Cost per pound, $0.109.

The following tabulated statement gives a resume of the above tables, separating labor from material, and adding to each item the general expenses, proportionately, for American locomotives:

To this cost must be added the expenses incidental to more rigorous inspection by French railways, better finish being required, radical changes in current shop practice rendered necessary in the construction of an entirely new and different type of locomotive, also the legitimate profit to which builders are entitled; it will, therefore, be seen that in ordinary times American builders cannot successfully compete with French prices. American locomotives can only be sold in France during periods of great activity, when French builders are unable, owing to full order books, to offer satisfactory deliveries, or else during times of depression in America, when builders are willing to sacrifice all or a part of their usual profit in order to keep their shops going.

AMERICAN LOCOMOTIVES.

	Wt. empty, 82 tons. Loaded wt., 87 tons.		88 tons. 93 tons.		Average.	
	Total.	Per lb.	Total.	Per lb.	Total.	Per lb.
Labor and factor	$ 5,425	.....	$ 5,881	.....	.....	.....
Part of general expenses	513	.....	747	.....	.....	.....
Total for labor	$ 5,938	$0.033	$ 6,628	$0.034	$ 6,280	$0.0335
Material and factor	$10,121	.....	$11,327	.....	.....	.....
Part of general expenses	1,021	.....	1,453	.....	.....	.....
Total for material	$11,142	$0.062	$12,780	$0.066	$11,961	$0.064
Grand total	$17,078	$0.095	$19,408	$0.100	$18,243	$0.0975

FRENCH LOCOMOTIVES.

	Consolidation.		4-8-0 type.		Average.	
Labor and overhead charges	$ 7,017	$0.047	$ 5,240	$0.0335	$ 6,028	$0.04
Material and overhead charges	11,772	0.078	12,797	0.086	12,285	0.082
Grand total	$18,789	$0.125	$18,037	$0.1195	$18,313	$0.122

With the exception of the arbitrary percentage taken as overhead charges, which is only estimated, the above statement is interesting and gives very clear comparisons between the costs of production in the different countries.

Thus, notwithstanding the considerably higher prices paid for labor in America, the net price per pound falls much below the average cost in France. This is due partly to the fact that many parts used in American locomotives are delivered finished and ready for application, and that the labor proper on these parts is charged to material. The greater simplicity of design and lesser amount of finish must also be considered in American locomotives, as the engines considered are of the simple expansion type. But notwithstanding these factors, the difference in cost is worthy of consideration and is without doubt due to special American shop practice and general methods of construction. Concerning material, besides the extra cost accruing in America on certain parts delivered and finished and ready for application, there is a difference of 0.245 dollars per pound between the two costs, representing an excess in the French prices of about 30 per cent.

We will now consider the American price per pound, as applied to a compound locomotive, delivered in France, by adding the factors appearing in the following table:

Cost per pound in America for a single expansion locomotive	$0.0975
Overhead charges on capital (not considered in a railway company, but which must be added in the case of a manufacturer)	0.011
Extra for copper firebox and staybolts (say $1,200 to $1,400 per engine)	0.007
Extra for compounding feature	0.008
Duty when entering France	0.018
Stripping, boxing, packing, insurance, reassembling at destination (about $2,000 per locomotive)	0.011
Total, per pound	$0.1525

German labor is generally higher than in France, and less good. Material is expensive in France, particularly on account of the high duties imposed, the minimum rates of which are as high as 64 cents to $1 per 100 pounds on steel plates, 73 cents for rough tires and axles, and 54 cents on shapes.

In a recent report made out by the tariff commission, Marc Reville writes that the duty imposed on imported material necessary for the construction of a compound locomotive weighing 63 tons, amounts to a total of $1,703, corresponding to 1.23 cents average per pound of finished engine.

The duty on imported locomotives, 1.4 cents per pound, amply protects French builders; it is a significant fact that in the revision of the tariff, now under discussion, the large French metal industry has asked for no additional protection. It may, therefore, be assumed that builders consider themselves sufficiently, even amply, covered by the actual schedule of rates.

There are no data proving that this duty of 1.4 cents per pound on locomotives imported from Germany is greater than the actual cost of production in the two countries; we have seen in this paper that as far as labor is concerned, the German builders have a distinct disadvantage; it may, therefore, be correctly assumed that with the tariff now applied in addition to the freight charges which German builders are obliged to pay, there is no apparent reason for the German locomotives being any cheaper than the French.

It may be drawn from the data given in this article that in normal times, and for locomotives of French design, delivered in France, little or no advantage is possessed, as far as price is concerned, by American or German companies over French builders. But builders in the United States are far ahead in time of delivery.

LONG RUN OF A CRUCIBLE FURNACE.

The Columbia Tool Steel Co., at Chicago Heights, Ill., has just completed what is believed to be the longest continuous run on record for a Siemens-Martin type of crucible steel melting furnace working entirely on tool steel. The No. 2 furnace, under the supervision of Wm. J. Mathews, was started Oct. 7, 1907, and has run continuously night and day up to July 1 this year, a run of 21 months lacking six days, during which time approximately 3,000 heats amounting to about 4,500 tons have been made.

It is only a few years since this type of furnace was hardly expected to run over five or six weeks and when tool steel makers were able to get a five or six months' run it was considered phenomenal.

The above record speaks well for the quality of refractory brick manufactured in this country, although it must be stated that a great deal depends on the care given and the skill exercised in handling the furnace by the melter in charge.

The Shenango Furnace Co. is completing a new ore storage yard at its furnaces at Sharpsville, Pa., which will have a capacity for holding 400,000 tons. The yard will serve furnaces 1 and 3 and the projected new No. 2 stack. It is equipped with a Brown hoist electric traveling bridge which spans the trestle and ore yard and runs 65 feet above the yard line. An electric transfer car is also operated in this connection. The new yard is expected to be ready for use about July 20.

A NEW ENGINE STOP.

Damage due to runaway engines is not infrequent and is usually traceable to one of two causes: Either absence of a safety stop on the governor or to its failure to act in case of failure of the governor drive. The Strong safety stop is claimed to be free from a number of objections urged against other types in that no time is lost in screwing down throttle, as the device operates a quick-closing valve independent of the throttle, and it is not dependent upon the action of belts, chains or motors, and that it is impossible to start the engine until the device is properly set.

The speed limit connected with this engine stop is independent of all belts, chain drives, etc. It is bolted in place on the engine shaft and cannot be easily thrown out of service.

Figs. 2 and 3 show the stop set and released. Fig. 1 shows an installation with the stop set, the quick closing valve open and the engine running. Fig. 6 shows the stop released, the quick closing valve closed and the engine shut down. Figs. 4 and 5 show the speed limit in place on an engine shaft.

The detail description of the speed limit is as follows (See Fig. 4): It consists of a cold rolled steel band "A" and the spring steel band "B" clamped to the engine shaft by the clamps "E," the weight "W" being free to move more or less from the center of the shaft as the speed of the engine varies, the slide clamps "C" which can be moved toward or from the weight as the speed of the engine demands. These clamps are set for the desired speed before leaving the factory. The speed limit consists further of the stand "F," at the top of which is a lever "D." With the engine running at normal speed, "F" can be adjusted in height until "D" is just out of striking distance of the hardened point "P." The slightest increase of the speed of the shaft will throw point "P" a slightly greater distance from the center, striking the lever "D," bringing it in contact with the arm of the stand "F," which closes the circuit. Current instantly passes through the magnet coils in the engine stop, draws down the magnet bar and with it lever "M." This releases hammer "H," which drops and knocks rod "L" from its support and closes the quick-closing valve. The latch "O" locks the hammer in place so that rod "L" cannot be placed on its support until hammer "H" is returned to its normal position. Lever "D" can now be returned to its vertical position.

It will be seen that opening the throttle will not permit the steam to enter the engine, as the quick-closing valve will be closed. The quick-closing valve cannot be held open unless the stop is set. The only thing which could be neglected by the engineer

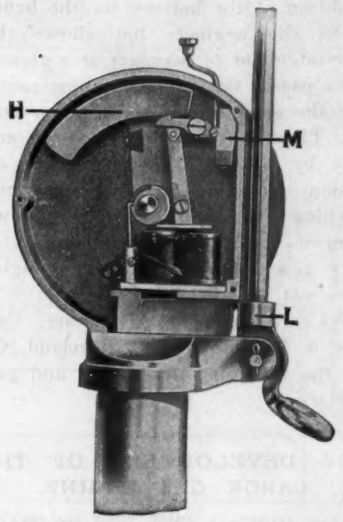


FIG. 2—POSITION WITH ENGINE RUNNING.

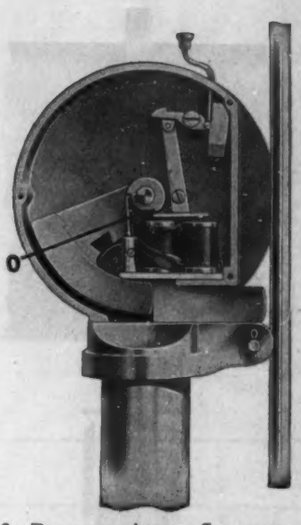


FIG. 3—POSITION AFTER SHUTTING ENGINE DOWN.

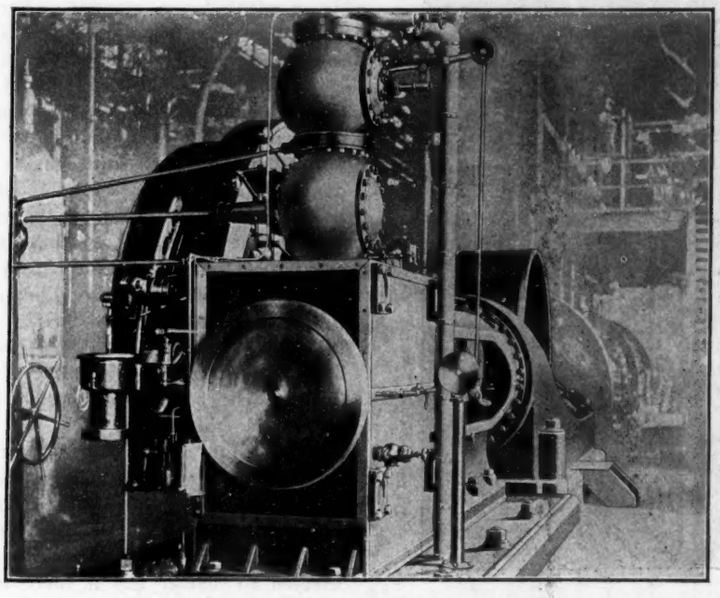


FIG. 1—STOP SET IN RUNNING POSITION.

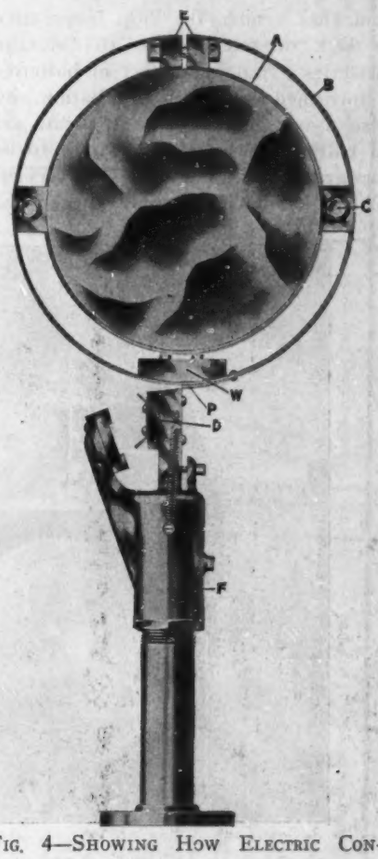


FIG. 4—SHOWING HOW ELECTRIC CONTACT IS MADE.

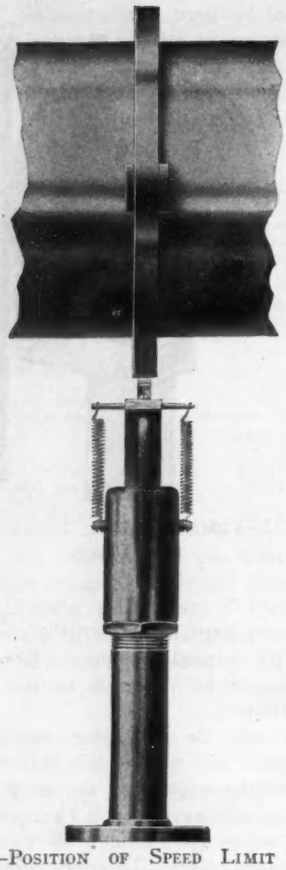


FIG. 5—POSITION OF SPEED LIMIT ON ENGINE.

and thus render the stop inoperative is lack of attention to the storage batteries. A duplicate set of batteries s furnished with each installation and also a volt meter. The duplicate set of batteries permits one battery to be charged while the other is in service. The volt meter not only checks the condition of the battery for the benefit of the engineer but shows the superintendent or manager at a glance, as he passes through the engine room, that the apparatus is being taken care of. The stop can be tested at any time by pushing the button, an attendant standing at the stop and catching the lever as it is thrown from its position. If the stop is at once reset the speed of the engine need not be affected.

We are indebted to Strong, Carlisle & Hammond Co., Cleveland, O., for the foregoing description and particulars.

THE DEVELOPMENT OF THE LARGE GAS ENGINE.

In a paper recently read before the Birmingham Association of Mechanical Engineers, Richard Bechtel gave some valuable information bearing upon the subject of operating costs of large gas engines. His paper was illustrated by heat balance diagrams, which have already appeared in THE IRON TRADE REVIEW of May 13, 1909, in Dr. Junge's article on Gas Power for Rolling Mills. Mr. Bechtel also submitted a table which brings the installations of large gas engines down to a very recent period, though to this table should be added a portion of the Gary plant, as well as several others.

In the abstract of Mr. Bechtel's paper which follows, we have substituted dollars and cents for the English currency in the original.

The cost for upkeep and maintenance of a modern gas engine plant are, according to reports received from many plants, with large gas engines about 1 to 2 per cent of the capital outlay for the gas engine alone. In general, 1 per cent may be taken as plenty for an up-to-date plant. This figure is practically the same as for a steam turbine plant, relatively; absolutely it is, of course, higher, according to the higher capital outlay of the gas engine; but if the costs of the boilers, superheaters, economizers, and especially of the piping, are also taken into consideration, the upkeep of the steam plant comes to the same as, and often even higher than, that of a gas plant. We have a report from the manager of one of the largest iron works where Nurnberg engines are installed stating that, according to his experience, the cost for upkeep, maintenance and repairs have been considerably smaller for the gas engine plant than for a steam engine plant of the same output.

As to the alleged unreliability of gas engines, the best proof to the contrary is the fact that the gas engine is being more and more used in collieries and iron works, and this in works where reliability of running is absolutely important. Further, in all cases where the works' manager and the staff have become familiar with gas engine working there, it has been again installed when an extension or alteration has become necessary. (See table.)

Steam for Stand-by Unnecessary.

There are a number of works on the continent at the present time where the use of steam engines has been entirely abandoned, and which possess only gas engines. This brings me to a statement sometimes made, that a gas engine plant requires a steam plant for a standby. The answer to this is simple. No steam is required, except that possibly in a case where the whole of a series of furnaces being out of blast, steam or other power will be required to start one of the furnaces until gas is produced. There is a completely steamless blast furnace plant in the neighbrohood of Hayingen. In these works the blowers have been driven by motors for starting, the current being supplied by works miles away. The George-Marienhutte, at Osnabruck, is another example of steamless plant. The electric power station, which delivers all the power for the steel works, rolling mills, etc., is dependent on gas engines alone, and gas engines alone are used as standby. In the Haspe Iron & Steel Works, Westphalia, a gas producer plant has been erected to deliver gas if there is lack of gas from the blast furnaces. The

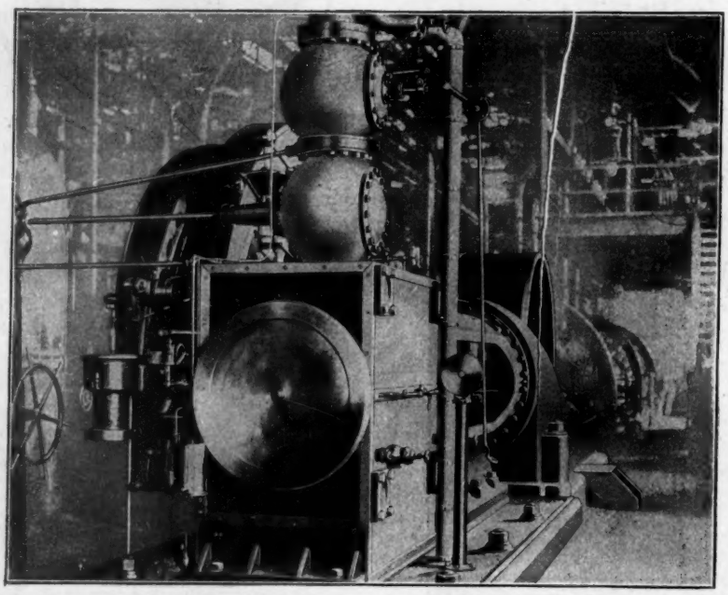


FIG. 6—STOP IN SHUT-DOWN POSITION.

DEVELOPMENT OF LARGE GAS ENGINES.

GAS ENGINES OF AND ABOVE 1000 B.H.P. INSTALLED THROUGHOUT THE WORLD UP TO AUGUST 15, 1908.

MAKER	Number	Single or Double-acting	Total Output	GAS					FOR DRIVING				Other Purposes	DELIVERED FOR						
				Blast Furnace Gas	Coke Oven Gas	Producer Gas	Town Gas	Natural Gas	Dynamos	Blowing Engines	Rolling Mills	Transmission		Belgium	Germany	England	France	North America	Austria	Other Countries
			B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.	B.H.P.
Aschersiebener Machinenbau-A-G. vorm. W. Schmidt & Co.	12	Double-acting, two cycle	17,600	16,500	—	1,100	—	—	12,800	3,500	1,300	..	..	1,100	15,200	..	..	..	..	1,300
Deutsch-Luxemburgische Bergwerks-u Hütten-Aktien-Gesellschaft, Abt	11	Double-acting, four cycle	14,100	12,100	2,000	—	—	—	11,700	2,400	..	..	..	..	10,100	..	..	..	..	4,000
Fredrich Wilhelms-Hütte, Mülheim a Ruhr. Donnersmarckhütte, Labrze O.-S.	2	Double-acting, two cycle	2,000	2,000	—	—	—	—	—	2,000	..	..	..	..	2,000	..	..	..	..	..
Ehrhardt & Sehmer, G. m. b. H., Schleifmühle	39	Double-acting, four cycle	59,300	45,350	12,600	1,350	—	—	48,650	10,650	..	..	..	4,050	41,300	1,350	7,950	..	4,650	..
Elsässische Maschinenbau-Gesellschaft Mülhausen	29	Ditto ditto	38,000	36,000	1,000	1,000	—	—	17,800	20,200	..	..	..	..	24,200	..	7,100	..	..	6,700
Gasmotorenfabrik Deutz, Cologne-Deutz,	15	Five single and ten double-acting, four cycle	20,800	18,000	2,800	—	—	—	17,000	3 800	..	..	..	..	11,600	..	..	..	7,200	2,000
Gutehoffnungshütte, Oberhausen	27	Double-acting, two cycle	24,400	21,400	3,000	—	—	—	8,900	15,500	..	..	..	..	17,600	5,400	..	..	..	1,400
Haniel & Lueg, Düsseldorf-Grafenberg	32	Double-acting, four cycle	45,000	38,500	6,500	—	—	—	32,000	13,000	..	..		..	45,000	..	..	..	..	..
Märkische Maschinenbau-Anstalt Ludwig Stuckenholz, Wetter a. Ruhr	8	Three single and five double-acting, four cycle	10,600	—	—	—	—	—	3,000	4,600	3,000	..	..	..	10.600	..	..	..	..	..
Machinenbau-A.-G. vorm. Gebr. Klein Dahlbruch	24	Double-acting, two cycle	38,999	38,999	—	—	—	—	2,028	29,510	7,461	..	..	..	23,348	4,436	..	..	..	11,215
Machinenbau-A.-G. vorm. Gebr. Klein, Filialwerk in Riga	4	Ditto ditto	5,326	5,326	—	—	—	—	—	4,104	1,222	..	..	..	..	..	..	..	..	5.326
Pokorny & Wittekind, Frankfurt a. M.-Bockenheim	4	Ditto ditto	2,200	1,000	—	1,200	—	—	600	1,000	..	..	600	..	1,000	..	..	..	..	1,200
Schüchtermann & Kremer, Dortmund	3	Double-acting, four cycle	3,600	3,600	—	—	—	—	3,600	—	..	..	..	..	3,600	..	..	..	..	..
Siegener Maschinenbau-A.-G. vorm. A. und H. Oechelhaeuser	29	Double-acting, two cycle	41,410	41,410	—	—	—	—	1,320	38,030	..	..	2,060	..	38,610	..	..	..	..	2,800
A. Thyssen, Mülheim	43	Double-acting, four cycle	86,000	80,400	5,600	—	—	—	38,300	47,700	..	..	..	10,500	75,500	..	..	..	..	..
Maschinenfabrik Augsburg Nürnberg A.-G.	129	Ditto ditto	203,870	161,570	29,100	13,200	—	—	128,870	72,300	1,500	1,200	..	2,400	160,570	3,600	17,200	..	..	20,100
Skodawerke A.-G. Pilsen	10	Double-acting, four cycle	13,650	13,650	—	—	—	—	7,500	3.750	2,400	..	..	..	..	..	..	..	13,650	..
Société Anonyme John Cockerill, Seraing (Belgium)	3	Two single and thirty-one double-acting, four cycle	42,164	40,164	2,000	—	—	—	—	—	..	..	..	28,664	1,200	..	6,000	..	..	6,300
Schneider & Cie., Creuzot (France)	9	One single, eight double-acting, four cycle	16,800	16,800	—	—	—	—	15,600	1,200	..	..	..	..	..	..	16,800	..	..	..
British Westinghouse Co., Manchester	1	Single-acting, four cycle	1,000	—	—	1,000	—	—	1,000	—	..	..	..	..	..	1,000	..	..	..	..
The Lilleshall Co., Ltd., Oakengates, Salop	2	Double-acting, four cycle	2,100	2,100	—	—	—	—	—	2,100	..	..	..	..	..	2,100	..	..	..	..
Maher & Platt, Manchester	2	——	2,400	—	—	2,400	—	—	1,000	—	..	..	1,400	..	..	2,400	..	..	..	..
Richardson, Westgarth & Co., Middlesborough, (England)	6	Double-acting, four cycle	6,900	4,700	—	2,200	—	—	4,700	2,200	..	..	..	..	..	4,700	..	..	..	2,200
Allis Chalmers Co., Milwaukee, Wis.	46	Double-acting, four cycle	128,230	121,930	—	6,300	—	—	98,230	30,000	..	..	..	..	..	..	..	128,230	..	..
Snow Steam Pump Co., Buffalo, N. Y.	60	Ditto ditto	111,260	35,720	—	4,400	24,600	46,540	47,720	17,000	..	..	46,540	..	..	..	..	111,260	..	..
William Tod Co, Youngstown, O.	5	Ditto ditto	16,000	16,000	—	—	—	—	1,700	14,300	..	..	..	..	..	..	..	16,000	..	..
De la Vergne Machine Co. New York	26	Double-acting, two cycle	42,200	40,000	—	1,000	—	1,200	8,000	32,000	..	2,200	..	..	..	..	..	42,200	..	..
Westinghouse Machine Co., Pittsburg	17	Double-acting, four cycle	39,800	33,000	3,600	1,000	—	2,200	7,600	32,200	..	..	..	..	..	..	..	39,800	..	..

large iron works at Rheinhausen, Messrs. Krupp at Schalke, and many other works have only gas engines, without any steam plant as standby. The newly erected Gary Works in the United States are an interesting example of how the gas from blast furnaces can be utilized in modern iron and steel works.

Attendance.

The cost of attendance can easily be determined by taking for each tandem engine one unskilled laborer as oiler, and for two tandem engines together, or one twin tandem engine, one engine driver (per shift). Tandem engines, i. e., an engine with two double-acting cylinders, are built in sizes from 400 brake horsepower to 3,000 brake horsepower, and it appears at once that the cost of wages can be considerably reduced by choosing larger engine units, as the number of attendants depends only on the number of engine units. In coke oven gas plants no further attendance is required; in blast furnace gas plants one man for the gas cleaning plant is sufficient. By comparing the cost of wages for a gas and steam-driven plant, the wages of the men who are necessary for stoking and handling coal and ashes for the additional coal-fired boilers will turn the scale in favor of the gas plant, although the turbine itself requires less attendance.

Lubrication.

The costs of lubrication of gas engines are higher than those of steam turbines, and about equal to those of reciprocating steam engines. The consumption of double-acting gas engines, however, is considerably lower than that of other systems with trunk pistons. It can be taken, with ample safety, that 1 gramme per brake horsepower per hour is sufficient for the lubrication of the gas engine, the dynamo, and the auxiliaries such as compressors, water pumps, etc. Accepting this figure, the consumption of a 1,000-brake horsepower engine, running night and day, will be: 5.8 gallons per day; 40.6 gallons per week; 2,111 gallons per year; but experience has shown that with larger units the specific oil consumption becomes considerably lower. The price of the oils suitable for gas engines runs about 36 cents to 42 cents per gallon.

Repairs.

The costs of repairing and cleaning are especially emphasized by our opponents as unfavorable, although they are, as in the case of the oil consumption, a relatively small item in comparison with the total working and first costs of a large power plant. According to particulars supplied by 11 iron and steel works where gas engines have been running continuously for a number of years, the annual costs of repairs, including wages, amounted to between 1 and 2 per cent of the first costs, these including price of gas engine completely erected, but without building and foundations, also without the electrical portion. The higher percentage, viz., 2 per cent, refers exclusively to older plants, and we have found generally that in new gas engine plants, the inexperience of the attendants causes at first higher costs of maintenance, but after a little experience the cost drops considerably. Some figures regarding the cost of repairs (material and wages), per kilowatt-hour, which were given to us, may perhaps be of interest:

COST OF REPAIRS PER KILOWATT-HOUR.

Plant factor. Per cent.	Cost per unit. Cents.
57.0	0.020
66.5	0.165
62.5	0.244
33.0	0.260
66.0	0.012

These figures, when all reduced for a common plant factor of 65 per cent, give an average of 0.017 cents per unit. If we include in our estimate 2 per cent of the capital outlay of the gas engine for repairs, and allow 7 per cent for depreciation on engines, electric machinery, crane and foundations, and 4 per cent for interest on the total first costs, the total approximate costs of the above items for a 1,000-brake horsepower gas installation will be about $5.75 per brake horsepower per year. This figure is considerably decreased with larger plants. For a 2,000-brake horsepower plant $4.56 may be taken as sufficient. All these figures for the upkeep of gas engines will probably be higher than those of steam turbines alone, although they may appear surprisingly small. For an economical comparison, however, the maintenance of the boiler, superheater, economizer, pumps, water softener and piping, must be taken into consideration, all of which do not exist in the case of gas. It therefore appears that the cost of maintenance of power plant of gas engines, driven by blast furnace and coke oven gas, is in no case higher than that of steam plant, but, on the contrary, much lower, as was confirmed to us by several works which have large installations of such engines.

Cost Per Working Hour.

I shall conclude my remarks regarding the working costs of gas engines by giving the report of the working of a 2,000-brake horsepower gas blowing engine, which has reached us lately. This engine was running from May, 1907, until November, 1908, i. e., altogether during 19 months, or 13,870 hours. During this time the engine was actually running for 13,639½ hours, and standing only for 230½ hours. The working costs during this time were:

Wages	$3,177.36
Material, as oil, waste, etc.	3,193.44
Repairs	645.60
	$7,016.40

The costs per working hour consequently amounted to 50 cents, and per brake horsepower per hour, to 0.25 cents. During the first 16 months the interruptions in service represent exclusively the time spent in repairs to the tap-hole of the furnace, and could only be utilized for the most indispensable work to be done, whilst during the last three months the repairs to the tap-hole of the furnace were of a somewhat longer duration, so that the engine was available 60 hours for repairs. At regular intervals the rinsing out of the jackets took place, and all gathering scale was as far as possible removed. The gas valves, as well as the regulating sluices of the gas main were also cleaned at regular intervals. These stops sufficed also for the keeping in good order of the ignition apparatus. The crosshead and crank shaft bearings were readjusted twice during this time, and each time they were found to be in good condition. The lining showed a wear of 1/64-inch on both sides. Each inlet valve was taken out once and cleaned. After the engine had been in operation six months, about four or five air valves of the blowing cylinder were further systematically taken out at each stop; such valves were then cleaned, overhauled in all parts and repaired, and during the next stop were put in place of the same number of valves, which were in their turn taken out, cleaned, etc. By this means it was possible to maintain always the full output of the blowing engine. There are included in the costs the salaries of the resident engineer and assistant, as well as the expenditure for gas cleaning and cooling water for the pistons. The following were not considered: (1) Consumption of gas; (2) consumption of power for gas cleaning and piston cooling; (3) cost of cylinder cooling water; (4) depreciation. Items 2 and 3 would increase the costs only a very slight extent, as the expenditure is divided among many engines.

Efforts of the Steel Corporation to Promote Safety of its Employes.

At the twenty-second convention of the International Association of Accident Underwriters, which was in session at Niagara Falls, Can., last week, a paper by Dr. Wm. H. Tolman, director of the Museum of Safety and Sanitation, New York City, was presented . The subject was "Perils of Peace or a Safer America," and the following description of the efforts of the United States Steel Corporation to promote the safety of its employes was included:

The United States Steel Corporation owns all the capital stock of the American Bridge Co., American Sheet & Tin Plate Co., American Steel & Wire Co., Carnegie Steel Co., Illinois Steel Co., Lorain Steel Co,, National Tube Co., and the Tennessee Coal, Iron & Railroad Co., as well as many other smaller corporations engaged in steel making and transportation of iron ore. These various companies which it owns, either directly or through its subsidiary companies, number over 100, with an output comprising some 55 per cent of the total steel output of the United States. Their employes number upwards of 200,000. These companies operate some 150 plants for making steel and all kinds of steel products, and, in addition, many iron and coal mines, several railroads engaged principally in the transportation of iron ore and coal, and a line of steamships which carry iron ore from the ore docks at the head of Lake Superior to the lower lake ports for delivery to the furnaces.

From the early organization of the subsidiary companies of the United States Steel Corporation, special departments to deal with accidents to their workmen were organized, so that they might deal directly with their injured men. Their casualty departments have devoted themselves not merely to the settlement of claims but have given constant and careful attention to the prevention of accidents. Every accident has been exhaustively investigated to determine its cause, always seeking means for preventing a recurrence of the same kind of accident. Complete records are kept, and where accidents of similar character appear on the records, special inquiry is directed to these accidents with a view to finding out how the dangers which they show can be avoided. Regular inspections and reports have been instituted, rules put into force and warnings emphasized. In each company, a force of experienced men constantly strives to provide more effective safeguards for machinery and to eliminate sources of danger. Some companies hold regular meetings of foremen to discuss the prevention of accidents; others have committees of workmen selected each month to inspect the mills by departments and suggest ways of promoting the safety of the workmen; some offer prizes for suggestions for practicable safety devices.

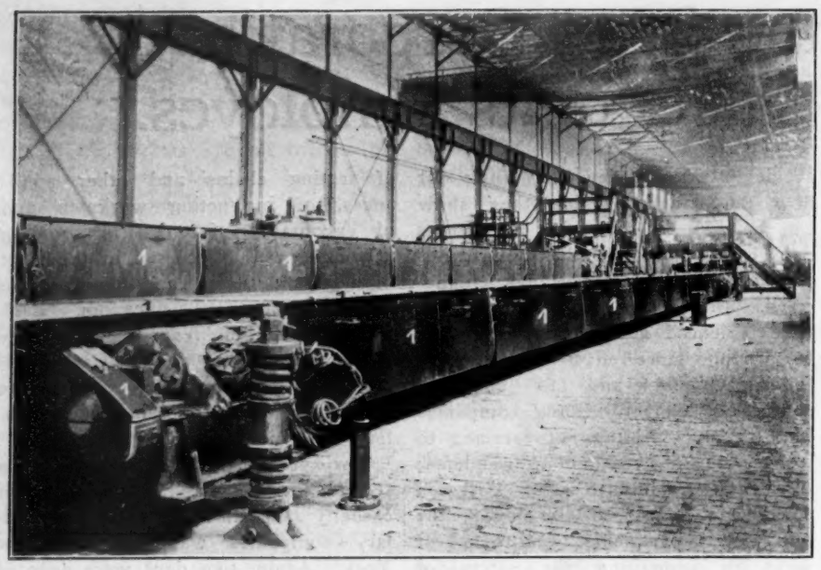
Provision has been made for first aid at the mills and for the treatment of injured men in the hospitals close at hand, by good surgeons. Payment is always made to the public hospitals for the treatment of men injured in the service of their companies. It cannot be alleged with truth that injured men from the mills and plants of their companies have been a burden to the public. Payments received from these companies and contributions made by them have helped to support the public hospitals in the vicinity of their works, so that the injured men may not be a burden on the public.

At a meeting held at the office of the United States Steel Corporation in May, 1906, two days were given to the discussion of problems connected with accidents to the workmen. The question which chiefly occupied consideration was that of preventing accidents. Different methods of inspection, of guarding machinery, of testing chains and other appliances, of instructing workmen and of encouraging foremen in avoiding accidents, were discussed in the light of what experience each company had gained in its own endeavors. Each learned something from the experience of the others, and a considerable impetus was given to the work of all the companies toward solving the problems presented.

Two years later, in April, 1908, a second meeting of the managers of casualty departments of the subsidiary companies was held in New York. Again, two days were devoted to the discussion of problems connected with accidents to workmen. The experience of each company during the intervening time was carefully considered. As a result of consideration during these two years, there was evolved a plan for a central committee of safety to act independently of any of the casualty departments. This committee was to complete and perfect a plan for inspecting, on its own account, the different plants and works of the subsidiary companies, with reference to the best methods of preventing accidents and safeguarding employes. In addition, the committee was to act as a clearing house in obtaining and disseminating information and suggestions tending toward the prevention of accidents and safeguarding of employes. The committee was given power to select independent inspectors to act on its behalf. They were to make written reports of the conditions at the different plants and works, with reference to their methods of preventing accidents, and to make suggestions for further means for

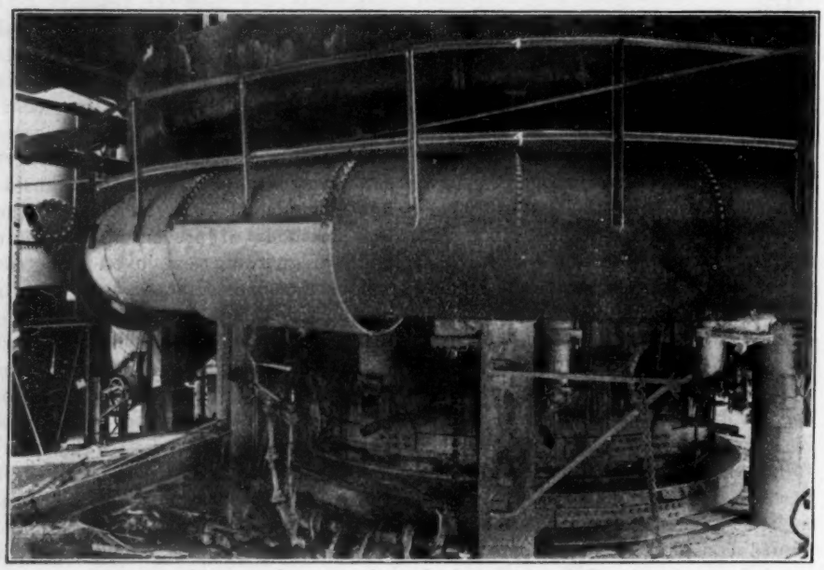
RULES TO PREVENT ACCIDENTS.
EACH EMPLOYEE SHOULD KNOW EVERY RULE. BE WATCHFUL AND REPORT ANY ONE WHOSE CARELESSNESS IS APT TO INJURE HIMSELF OR OTHERS. GET RULES AT SAFETY DEPARTMENT.
VYSTRAHY A BE NESCESTJA SA NE STALO.
KAŽDY ROBOTNIK MEL ZNAT VSECKY PRAVIDLA A ZAKONY, A MUSI RAPORTOVAT KAŽDEHO KDO BY SVOU VLASTNI L'AHKOMYSLNOSTI PRIVED SOBE ALEBO JINYM PORAVENI. TUTO KNIHU MUŽETE DOSTAT OD SAFETY DEPARTMENTU.
RENDSZABALYOK HOGY SZERENCSETLENSEG NE TORTENJEN.
MINDEN ALKALMAZOTTNAK TUDNIA KELL A SZABALYOKAT, ÉS FEL KELL JELENTENIE MINDENKIT AKINEK VIGYAZATLANSÁGA ONMAGANAK VAGY MASNAK SZERENCSÉTLENSÉGET OKOZHAT. E RENDSZABALYOK PELDARYAI A BIZTONSÁG SZAKASZBAN( )KAPHATOK.
SVAKI RADNIK MORA ZNATI SVAKO PROWILO.
BUDI OPREZAN I TUŽI SVAKOGA ČIJA BI NEOPREZNOST MOGLA DONIJETI NESRECE NJE MU ILI KOME DRUGOME. OVU KNIŽICU MOŽE SVAKI DOBITI KOD SAFETY DEPARTMENT.
REGULY UPRZEDZAĆ WYPADEK.
KAŻDY PRACOWNIK MA OBZNAJOMIL SIĘ Z KAŻDA REGULA. KAŻDY PRACOWNIK MA ZAREPORTOWAL TYCH, KTORZY WYSTAWIAJA SIEBIE LUB INNYCH NA NIEBEZPIECZENSTWO. KSIAŻKE TĘ MOŻNA NABYĆ W SAFETY DEPARTMENT.
W. A. FIELD, GENERAL SUPERINTENDENT.

Illustrations made from photographs kindly loaned by Museum of Safety and Sanitation, New York.



1—Guard Over Rail Mill Table Motor Gears. 2—Stairs Over Rail Mill Rolls and Housings, Indiana Steel Co.

better safeguarding of the workmen. After the receipt of such reports and recommendations, the committee was authorized to transmit them to the proper representatives of the companies concerned, requesting these persons to submit, within such time as the committee might fix, returns showing what action had been taken upon such reports and recommendations. This committee put into operation immediately a most effective system of independent inspections, selecting men familiar with the machinery and operations of the different subsidiary companies and sending them to inspect the mills and plants. These inspectors were also men of experience in matters connected with accidents, competent to detect sources of danger and able to devise means of avoidance. They report directly to the safety committee. Their reports are exhaustive, taking up each building in the plant and covering it in detail. They call attention to the smallest sources of danger—worn floors, material piled carelessly and windows which should be cleaned to give better light; their comments cover even loose planks which workmen have left where they might fall; railings, ladders, footwalks and set screws are given the most careful scrutiny. Their reports and recommendations are gone over with care by the safety committee and are then sent to the proper representative of the company operating the plant in question. The committee requests the company to submit, within 30 days, a return showing what action has been taken to carry out the recommendations of the inspector; or, if objection is made to any recommendations, on what grounds. At the next meeting of the safety committee, these returns are taken up and discussed in detail. Where objection has been made to any recommendations and the reasons for such objection do not seem to the committee sufficient, the representative of the company concerned is requested to appear and explain the matter. Whenever it seems necessary, the committee, or one or more members delegated for that purpose, makes a personal inspection of the plant with regard to any points in dispute.

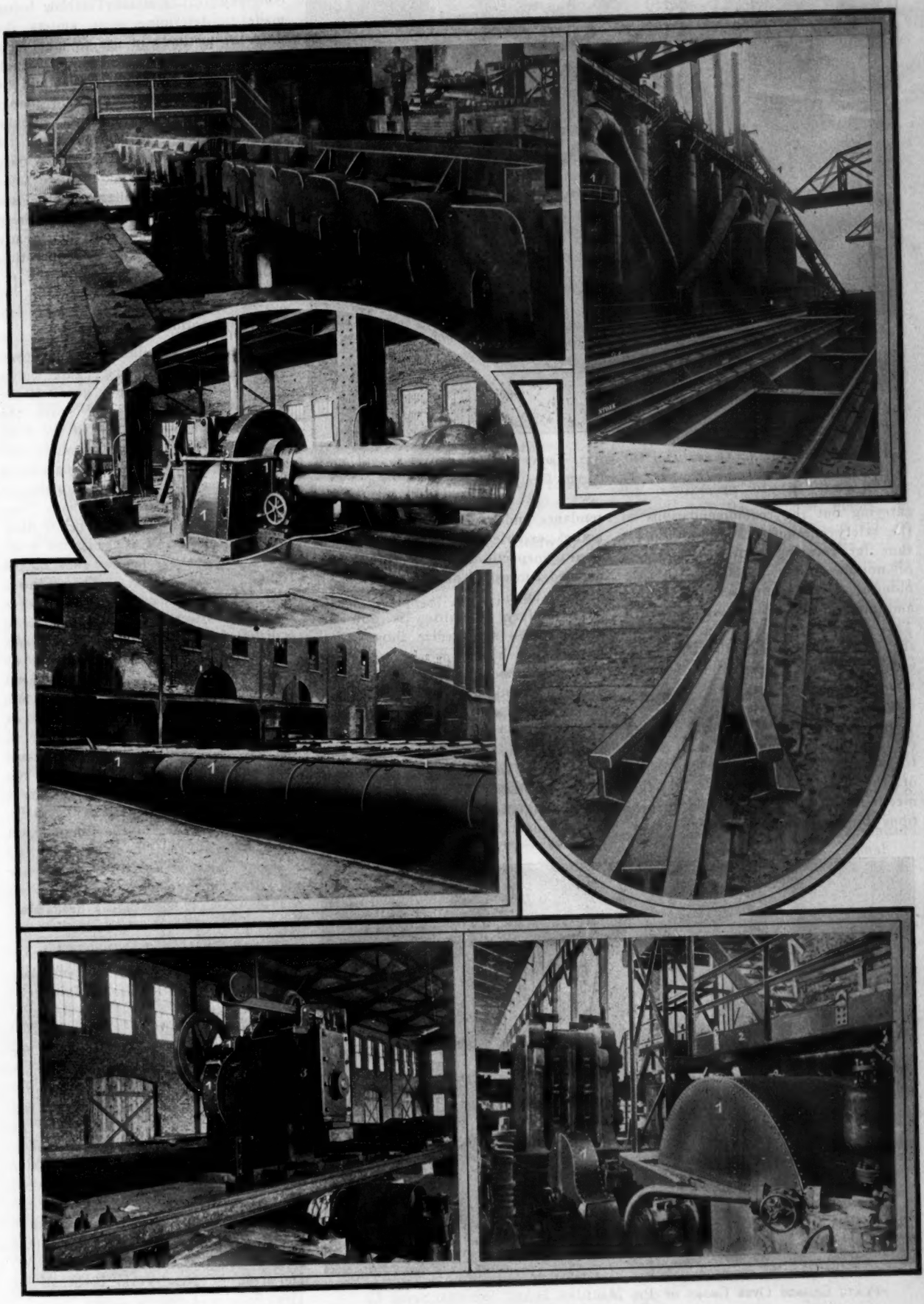


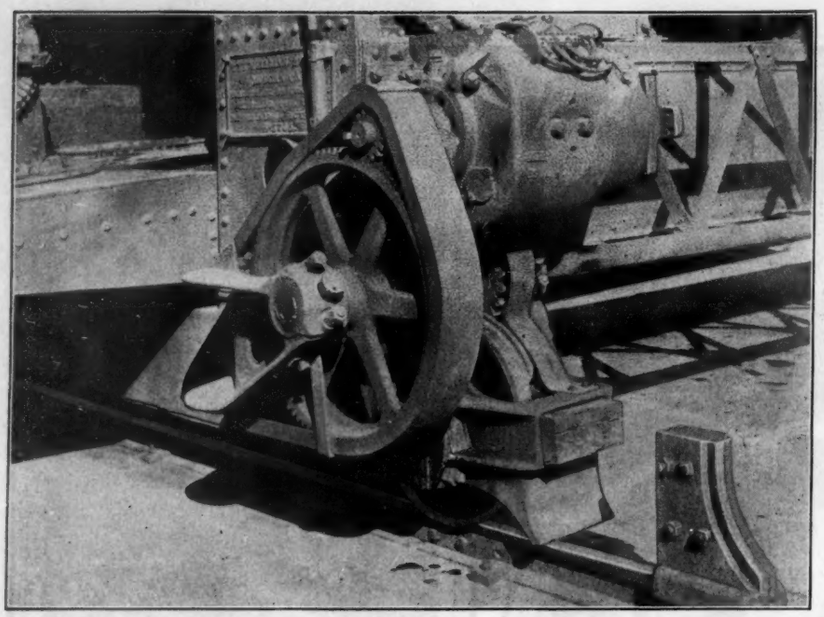
Railed Runway on Blast Furnace Bustle Pipes, Illinois Steel Co.

In six months, the committee has had 37 of the largest plants thoroughly inspected. It has received and considered no less than 2,600 recommendations made by the inspectors. More than 92 per cent of these recommendations were accepted and complied with by the companies interested. Less than 8 per cent required any additional discussion.

In fulfillment of its further usefulness as a clearing-house for information of value in the prevention of accidents, the committee, during the first six months of its existence, received from the different subsidiary companies more than 39 plans of new devices and appliances for safeguarding machinery, warning employes, and otherwise preventing accidents. These suggestions came in the form of letters, stating the experience of the several subsidiary companies in connection with different kinds of accidents due to causes which might exist in other plants. These letters reported various kinds of guards for machinery, which had been found effective. The letters were accompanied by blue-prints, photographs, estimates of cost and all information necessary to enable other companies, where similar conditions existed, to install such devices for the prevention of accidents. These data were carefully considered by the committee and transmitted to all companies where similar conditions might exist, with recommendations from the committee regarding the different suggestions. By subsequent inspections, the committee is enabled to tell how fully these different devices have been adopted.

It has been impossible to obtain complete records showing the entire amount that has been expended in





Shields Over Driving Gears and Guard in Front of Track Wheels of Open Hearth Charging Cranes, Tennessee Coal, Iron & R. R. Co.

carrying out the recommendations of the safety committee, yet the reports thus far received show expenditures of not less than $30,000 in the six months, for additional safeguards and methods of preventing accidents. This expenditure is in addition to the large sums which the subsidiary companies have spent and are constantly spending on their own initiative for better safeguards.

In December, 1908, a third meeting of the casualty managers was called, to consider the results of the work of the safety committee. At this meeting, the men who made inspections for the committee were in attendance and gave the results of their actual experience in the course of their inspections. The plan was deemed successful and its continuance decided upon.

The safety committee is now endeavoring to standardize those safety devices which are in use upon machinery common to large numbers of different plants. Heretofore, each subsidiary company has worked out its own method of guarding flywheels, gears, electric switchboards and similar sources of danger which exist at all large mills. Often the form of guard adopted has been different even in two plants of the same subsidiary company. An endeavor is now being made to determine, from among the different methods in use to meet certain common sources of danger, which are the most effective and should be adopted at all the mills and plants throughout the organization of the United States Steel Corporation. It is hoped thus to insure the use of only the most approved and effective safeguards, and by familiarizing the superintendents and foremen with these safeguards, to bring about their ready adoption everywhere by operating men themselves, even without the request of the safety inspectors.

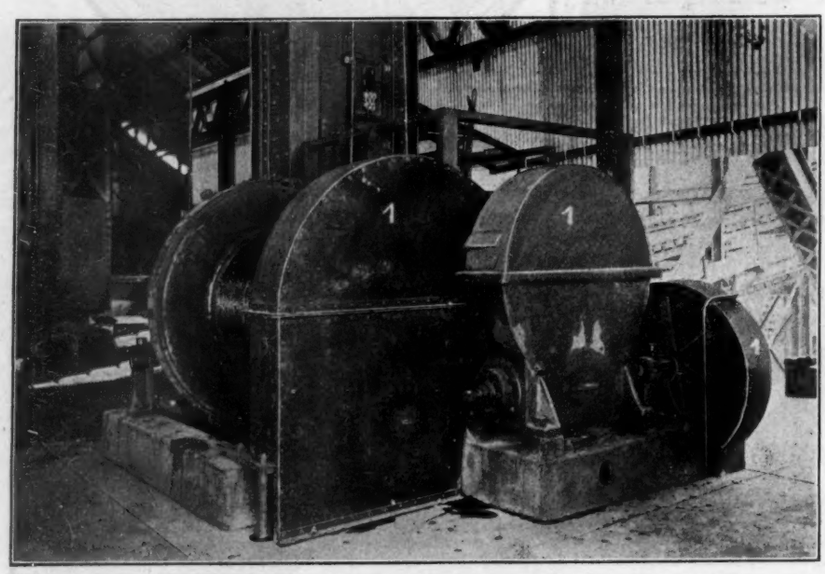


Plate Guards Over Gears of Pig Machine Hoist, Indiana Steel Co.

Explanation of Illustrations.

Referring to the illustrations on page 175, the upper left hand figure shows the shields over the spur gears of the ingot run, also the bridge over the same, in the blooming mill of the Tennessee Coal, Iron & Railroad Co. Immediately below will be seen the guards over the gears of the plate straightener in the boiler shop of the Indiana Steel Co., Gary. The figure next below illustrates the method of guarding the gears and shafting along the rail-runs of the Indiana Steel Co. The lower left hand figure shows the guards over the gears of a rail mill gag press, Indiana Steel Co. The upper right hand figure shows the arrangement of platforms and walks about the head of the hot blast stoves at Gary, while the middle figure shows the method of blocking frog wings and switches in the Ensley works of the Tennessee Coal, Iron & Railroad Co., and the lower right hand figure shows the shield for the table gears and drive shafts in the South works of the Illinois Steel Co.

The features referred to above are marked 1 in the illustrations. At 2 in the lower right hand figure are a platform and stair over the tables.

New Laboratory for Rensselaer Polytechnic.—The Rensselaer Polytechnic Institute, at Troy, N. Y., celebrated the 85th year of its existence recently by the opening of one of the most modern and best-equipped mechanical and electrical engineering laboratories. It is a memorial to the late Russell Sage, and the building and its contents cost over $400,000. The president of the institute read the letter from Mrs. Sage in which she presented $1,000,000 to the institute, and the resolutions of the faculty and trustees relating to the schools of mechanical and electrical engineering. Robert W. DeForest, of New York, in behalf of Mrs. Sage and others spoke.

EIGHT HOURS' ACT

Has Not Caused Trouble in England —An Important Combine.

Office of THE IRON TRADE REVIEW, Prince's Chambers, Corporation St., Birmingham, Eng., July 3.

We are making industrial history rapidly in this country. The most important event for a long time in the industrial world was the putting into effect of the eight hours' act on July 1. Almost to the last moment, an extensive stoppage in South Wales was expected, both sides being very determined. Prolonged conferences took place both in London and Cardiff, the result of which was that the contesting parties decided to keep their pits going and continue their negotiations. This gave enormous relief to the whole country, and the effect was instantly seen in a rise in the value of such securities as home rails. There were a number of small stoppages in the Birmingham district, but these were largely for convivial purposes by the men in honor of the occasion. No great difficulty is anticipated of settling the remaining points at issue. This has given great relief to the iron trade, and a curious fact is that so far there has been no increase in the price of coal, although an advance was confidently expected. In fact, it is slightly cheaper, and the Birmingham gas coal contracts have been settled at a saving of £15,000 on those prevailing last year.

Particulars have now been issued of a great Cumberland iron combine by Cammell Laird & Co., Ltd., the great makers of ordnance and shipbuilding material. The firm already owns the Derwent Iron & Steel Works, Workington, Cumberland, and has invited the shareholders to consider a scheme for amalgamating this works and the Solway Iron Works, Maryport, with the Workington Iron Co., the Harrington Iron & Coal Co., and the Mossbay Hematite Iron & Steel Co. The scheme provides for the transfer of the businesses to a new company to be called The Workington Iron & Steel Co., or some other similar name. The Mossbay company is a very large concern, with four blast furnaces, besides steel converters, rail mills and general steelmaking plant. The acquisition will enormously increase the productive power of Cammell Laird. It is proposed to have a nominal share capital of £2,000,000 divided into 800,000 preference shares of £1 each, and £1,200,000 ordinary shares of the same value. The first chairman of the directors of the new company will be Sir John Randles, the chairman of the Mossbay Iron Co.

W. & T. Avery, the Birmingham manufacturers of weighing machines, who have important American departments, report a profit of £24,678, practically the same as last year and they again declare a dividend of 10 per cent.

THE TOMLINSON LAUNCHED.

The steamer G. A. Tomlinson, building for Capt. J. J. H. Brown, of Buffalo, was launched at the Lorain yard of the American Ship Building Co., Saturday, July 10, being christened by Mrs. Tomlinson. The occasion was one of more than ordinary interest owing to the presence of a number of men prominent in the steel and vessel trade, including Thomas F. Cole, former president of the Oliver Iron Mining Co., W. M. Mills, general manager of the Tonawanda Iron & Steel Co., President William Livingstone of the Lake Carriers' Association, W. A. Prime, of New York, and Fred G. Hartwell, of Chicago. The new steamer is 524 feet over all, 504 feet keel, 54 feet beam and 30 feet deep, and will carry about 9,500 tons of ore.

Vanguard Company Growing.—The Vanguard Mfg. Co. of Joliet, Ill., will shortly move into a new home of its own. The company has purchased a tract of land adjacent to two railroad lines at Joliet and is erecting a brick and concrete factory building, 60 x 250. A brass foundry will be added to the various departments now in operation and the Vanguard company will shortly have one of the most complete plants for the manufacture of automobile specialties in the country. The 1910 line of wind shields, bumpers, spark plugs, etc., will include a new brass frame wind shield, called the "Breech-Lock" which, it is claimed, has superior qualities.

Unfounded Rumor.—Referring to reports that the Philadelphia plant of the Baldwin Locomotive Works is gradually to be removed to Eddystone, we are advised as follows by John H. Converse, president of the company: "Rumors to this effect have been very numerous, but are entirely without foundation. We have, as you are probably aware, a branch at Eddystone which is running as full as present work will permit, but we have no intention of removing our Philadelphia plant to Eddystone, or anywhere else."

LABOR AGITATORS

Object to Awarding Contract to Pacific Rolling Mill Co.

San Francisco, July 10.—The expected has happened. Scarcely had the contract for the structural steel for the new city hospital been awarded, when the union agitators objected, because the Pacific Rolling Mill Co. admitted that the material will be fabricated in the east. The trouble comes this time even earlier than was anticipated, and the tendency is to drive what little work remains in this city entirely out.

Patrick Noble, who represents the Pacific Rolling Mill Co., frankly admitted, at the time the contract was awarded, that he would have to give fully 50 per cent of the work to an eastern firm. The agitators, at the first meeting of the machinists' union held after the award had been made, asserted that the contract was awarded to the rolling mill company, with the indorsement of the Iron Trades Council and its affiliated unions, in the belief that the steel would be manufactured in San Francisco.

The fact that the city authorities are obliged to award the contract to the lowest and best bidder is overlooked, and the further fact that the contractor had to figure how and whence he could obtain the material at a rate to compete with eastern fabricators, is entirely ignored. These union men threaten to appeal to all unionists engaged in handling structural iron and steel to refuse to handle that material when it arrives.

The Southern Pacific Railroad Co. has plans ready for the construction of a steel bridge to span the Sacramento river at Sacramento, the capital of California. The bridge will be entirely of steel, and is to cost upwards of $1,000,000. Officers of the Southern Pacific will confer with the supervisors of Sacramento and submit the plans within a few days.

The Santa Fe Railway Co. is constructing a new steel bridge in place of an old wooden one, across the San Joaquin river, between Madera and Fresno. It will probably take one year, or almost that long, to complete the work. As soon as completed, the same company will replace the present wooden bridge with one built entirely of steel, near Modesto.

The Standard Oil Co. is constructing an 8-inch pipe line from Coalinga to Mendota, where it will connect with its main line from Bakersfield to Point Richmond, and increase the capacity by from 12,000 to 15,000 barrels a day.

NEWS FROM MANY INDUSTRIES

(In order to assist the post offices in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers:—

Lachlan E. McKinnon, William A. Nottman and Robert Nottman, are the incorporators of the McKinnon Chain Co., Buffalo, capitalized at $1,000,000.

The Crown Iron Bed Co., Cincinnati, was granted an Ohio charter through W. F. Boyd, F. E. Burnett, Paschal D. Baker and Charles E. Sturr, with $50,000 capital stock.

The Kaestner & Hecht Co., Chicago, with $150,000, has applied for a license to manufacture machinery of all kinds. The incorporators are Edward F. Hecht, F. E. Matthews and C. W. Rhodes.

Arthur Moore, Walter A. Moore and O. W. Davis, all of Oklahoma City, Okla., directors of the Arthur Moore Sheet Metal Co., have applied for a certificate of incorporation. The capital stock has been placed at $40,000.

The Garden City Machinery Co., Chicago, incorporated with $50,000 capital stock, to manufacture machinery, has these incorporators: Robert H. Stoll, Charles H. Bryce, W. D. Scrugham, 111-112 Dearborn street, Chicago.

The Eureka Iron Mfg. Co., capitalized at $25,000, has been incorporated to do a general manufacturing and mercantile business. Those interested are William E. Violett, Charles E. Gregory and Willard D. Brode, Chicago.

The Burriss Metal Shingle Co., Anderson, S. C., metal shingles, has been incorporated and will continue the plant of the Messrs. Burriss. The incorporators are J. T. Burriss, O. G. Burriss, J. R. Vandiver and E. P. Vandiver.

The Meteor Motor Car Co., Indianapolis, with a capital stock of $10,000, has filed articles of incorporation. The new corporation has these directors: Leonard Carter, Charles P. Henderson, Arthur B. Lathrop, Ransom P. Henderson and Joseph J. Cole.

The Missouri Car Co., St. Louis, with $15,000 capital stock, one half paid in, has been chartered by H. L. Schnure, Ed. Jacobs, John E. Mitchell, all of St. Louis, and A. R. Cox, Xenia, Ill. The company will engage in a general automobile business.

A certificate of incorporation has been granted to the Superior Mfg. & Tool Co., Cleveland, which has a capital stock of $15,000. The incorporators are August L. Larson, John J. Cassidy, George Tongring, Algar Tongring, William Cassidy and Gustav Bradenberg.

A certificate of incorporation has been granted to the P. & M. Construction Co., Manhattan, N. Y., to manufacture steel, iron and other metals, and structural iron work. The capital stock is $25,000. E. Pohl, S. Pohl, New York City, and T. L. Marsh, Brooklyn, are the incorporators.

The Sol Pollack Safe Co., New York City, has been chartered to manufacture safes, machines and pianos, with an authorized capital of $1,000. The incorporators are Solomon Pollack, Morris L. Pollack, 178 Chrystie street, and Louis Schulman, 56 East 107th street, all of New York.

The Darby Motor Car Co., St. Louis, has applied for a charter to manufacture and deal in motor cars, etc. The capital stock, fully paid, is $32,000. The stockholders are Clifford T. Darby, Allan P. Whittemore, James R. Bettis, of Webster Groves, Mo., and Harvey G. Dunham.

With $3,000 capital stock, the Cullen Transportation Co., New York City, has applied for a charter to manufacture machinery and mechanical appliances. Those interested in the new enterprise are James H. Cullen, James H. Cullen Jr., both of 254 Eighty-third street, Brooklyn, and Mary J. L. Freston, Edgemere, L. I.

The National Ventilated Barrel & Crate Co., Van Buren, Ark., has been organized with $25,000 capital stock. The company will establish a plant for manufacturing patent metal ventilated packing cases. The officers are C. J. Smetz, president; Robert Hillard, vice president, and A. J. Thrower, secretary.

Articles of incorporation have been filed by the Titan Engine Co. of America, New York, to manufacture motors, engines, cars, boats, etc., with a capital of $3,000. The incorporators are Nathaniel Doyle, 455 West Twenty-eighth street; George W. Garland Jr., both of New York, and John J. Hogan, Westhaven, Conn.

C. H. Evans, F. A. Bingham and L. J. Hacker, Chicago, have received articles of incorporation to do a general contracting and engineering business, as the C. H. Evans Engineering Co., with an authorized capital of $5,000.

The Venn Mfg. Co., Chicago, Ill., capitalized at $10,000, has been incorporated to manufacture and deal in machinery and specialties and novelties. The incorporators are: Theodore H. Venn, Oliver C. Dennis and Harry J. Keating.

Emmett R. Franklin, J. Bennett Turner, T. B. Fernald, John B. Van Cleft, Norwich, N. Y., have incorporated the Norwich Wire Basket Co., Norwich, N. Y. The capital stock of the company is $1,000, and it will manufacture wire baskets.

A charter has been granted to the Imperial Steel Range Co., Cleveland, to manufacture stoves. The capital stock has been placed at $75,000. Those interested are H. F. Tinnerman, Ira B. Bassett, Edward Meckes, Charles Aulbach and L. Z. Stone.

The Wisner Mfg. Co., New York, capitalized at $5,000, has filed articles of incorporation to manufacture machines, tools, etc., and deal in patents. The incorporators are George E. Constable, Brooklyn; Albert Wisner and Beatrice M. Wisner, Hollis, N. Y.

The Gillis-Strickland Motor Co., Rochester, N. Y., has filed application for a charter to manufacture automobiles, motor cars, boats, etc., with a capital stock of $25,000. Those interested are James W. Gillis, Pittsford, N. Y.; Samuel M. Havens, 17 Thayer street, Rochester, N. Y.; R. H. Strickland, 28 Euclid street, Rochester, N. Y.

The Crawfordsville Seed & Grain Separator Co., Crawfordsville, Ind., has been granted a charter to manufacture farm machinery. The capital stock is $50,000, and the directors are: Perry F. Stump, Harry T. Stout, John R. Coons, Sanford H. Drybread, John H. Elder, Jacob A. Stewart, Walter G. Thomas, Henry D. VanCleave, and Clinton B. Marshall.

The American Steel & Fuel Co., Salt Lake City, Utah, has been incorporated to develop iron deposits in Wasatch county, with a capitalization of $10,000,000, divided into 200,000 shares of $5 each, of which 20,600 shares are subscribed and 1,979,300 are reserved as treasury stock. B. F. Bauer is president; A. A. Sweet, vice president; J. M. Moore, second vice president; Henry P. Clark, treasurer, and G. S. Payne is secretary. H. A. Schweithart, W. S. McCarthy and George Buckle are directors.

The Detroit Architectural Iron Works Co., Detroit, capitalized at $10,000, has been organized and has begun operations in the old Stearns laboratory, 224-248 Twenty-first street. The new company will turn out architectural and ornamental iron, brass, bronze and wire, but not structural iron. For a time, the company will do only the

fabricating of its products, but expects later to take up the entire process. The officers of the company are: President and general manager, Alexander L. Stewart, for 18 years with the J. E. Bolles Iron Works; vice president and engineer, Frank S. Ougheltree, formerly superintendent of the Page Wire Fence Co., at Monessen, Pa.; secretary-treasurer, W. C. Clark, formerly in the wholesale coal business.

New Construction:—

The construction of the plant of the Warner Wire Fence Co., Pueblo, Col., was started recently.

O. R. Hukle, Lexington, Ky., is about to establish a plant in that city for manufacturing gas engines.

The Dresden Sewer Pipe Co., recently organized, will build a $75,000 plant in Dresden, O., in the near future.

The Frontier Iron Works, Buffalo, recently took out a permit to erect a two-story brick machine shop, to cost $12,000.

The Racine Steel Casting Co., Racine, Wis., contemplates the erection of a foundry and machine shop and office buildings.

F. F. Martenn, Boaz, Ala., is about to begin the construction of a foundry and blacksmith and machine shops at Oneonta, Ala.

The Sherman Machinery & Iron Co., Oklahoma City, Okla., is having plans prepared for a plant that is expected to cost about $250,000.

A permit was recently issued to the Jones & Laughlin Steel Co., Pittsburg, for the erection of a one-story steel spike factory, to cost $15,000.

The Shull Steel Castings & Mfg. Co., Canton, O., advises that they have let contracts for an addition to their present plant, 95 x 100 feet in size.

J. N. Harrison, of Topeka, Kansas, representing the Capital Iron Works, Topeka, is in Portland, Ore., planning to build a factory for the manufacture of steel furniture.

It is reported that the Columbia Wire & Iron Works, Portland, Ore., will erect a building of its own at Eighth and Market streets, Portland. The building is to be two stories, brick.

The W. K. Henderson Iron Works & Supply Co., Shreveport, La., has recently let the contract for the construction of a concrete building 80 x 151 feet, to be used as a foundry.

The contract for the ornamental iron shelter for the Pioneer Place comfort station, Seattle, has been awarded to the Artistic Ornamental Iron & Wire Works, Seattle, for the sum of $6,200.

The concentrating plant of the Oliver Iron Mining Co., at Coleraine, Minn., is in course of construction. A large amount of steel will be used in the structural work, and a great deal of heavy mining machinery will be installed.

Ground has been broken for the construction of a one-story brick building to be used as a storage, finishing and packing room, by the Standard Chain Co., York City, Pa. The building will be a steel frame structure, 288 x 56 feet. With the increase of space for ground flooring, a number of new machines will be installed, so that the capacity of the plant will be about doubled. Forty welding machines and a number of automatic twisting and trimming machines will be set up.

The Sharples Separator Co., West Chester, Pa., advises that the adddition to its foundry, construction of which has just commenced, will be 210 feet long by 40 feet wide; two stories for 110 feet of its length, and the remaining 100 feet one story high, giving nearly 13,000 square feet of floor space. The second floor of the building will be used for a charging deck and coke storage. On the first floor will be placed core making machines and exhaust mills for cleaning castings. A portion of its floor space will be used for bench and floor molders. The building will be of reinforced concrete and steel construction.

General Industrial:—

The plant of the Tidewater Steel Co., Chester, Pa., will be sold at auction, Aug. 3.

The Nimmo Fence & Wire Works Co., Cincinnati, has reduced its capital stock to $7,500 from $16,500.

The Sidney Tool Co., Sidney, O., has amended its charter, increasing its capital from $25,000 to $50,000.

The Progressive Metal Refining Co., Milwaukee, has increased its capital stock from $25,000 to $50,000.

The Nameuken Iron Co., Duluth, has filed notice of the increase of its capital stock from $200,000 to $1,000,000.

The Armstrong Machinery Co., Spokane, has recently closed a contract for 100 of its new milking machines.

The Caldwell Bros. Co., Seattle, Wash., wholesale dealer in machine tools, engines, boilers, pumps and general machinery has recently opened a branch office at Spokane, Wash.

The Knobel-Kappa Co., Louisville, Ky., advises regarding a recent fire, that the damage done to its plant was very small, and that it was able to resume operations within a few days.

The Central Castings Co., Chicago, has filed an amendment to its charter, changing its name to the International Mfg. & Supply Co., and increasing its capital stock from $6,000 to $25,000.

The Thomas Buchanan Co., recently incorporated, advises that it will continue the business carried on by Thomas Buchanan & Co., on the same lines as heretofore, in the manufacture of polishing and grinding machinery.

Proposals for car wheels and axles, steel, iron, rivets, bolts, steel cable, wire, pipe, fittings, and valves, will be received at the office of the general purchasing officer of the Isthmian Canal Commission, Washington, D. C., until Aug. 2.

Cyrus Currier & Son, Inc., Newark, N. J., machinists, founders and pattern makers, advise regarding the recent incorporation of their company that it will be a continuance of the same business as carried on under the former name, Cyrus Currier & Son. Mr. Francis Currier is president and general manager, and Cyrus Currier Jr., secretary and treasurer.

C. W. Leavitt & Co., New York City, American agents for the Girod electric steel furnace, advises that the following German works have taken out licenses to use the Girod electric processes: Gutehoffnungshutte, Oberhausen, Germany, one 5-6 ton furnace under construction, and Stahlwerk Becker, Crefeld, Germany, three 2-3 ton furnaces, also under construction.

The new power house of the Brown & Sharpe Mfg. Co., Providence, R. I., which is to be a consolidation of its five separate power plants, will ultimately have a capacity of about 3,000 horsepower. With electric drive, gas engines and producers, Stirling water-tube boilers, and Taylor gravity underfeed stokers, the new plant will be made thoroughly up-to-date in equipment.

The Harrisburg Iron & Steel Co., Harrisburg, Pa., advises regarding its recent incorporation, that it has taken over the Harrisburg branch of the United American Iron & Steel Co., its principal business being to handle and store iron and steel billets, crop ends, scrap, etc. The directors of the former company continue as directors of the new company, which will be under the same management as heretofore.

The Murray Iron Works Co., Burlington, Ia., reports that shipments of Murray Corliss engines for the first six months of ths year exceeded in number those for any previous corresponding period. This company has just exported a complete power plant for a flouring mill in Tsingkiangpu, China. The shipment includes a Corliss engine, tubular boiler, heater, etc., all of the Murray make.

The Alliance Machine Co., Alliance,

O., has in the last six weeks closed some large contracts for electric cranes with several of the leading steel works and manufacturers of the country. The various contracts call for 59 cranes, mostly for special service, and large capacity, and include three 150-ton ladle cranes, three 200-strippers, six soaking pit cranes, two slab charging machines, magnet cranes, gantry cranes, bucket handling cranes and standard, three or four motor cranes.

The superior criminal court of Boston recently imposed the following fines in the "Boston Agreement" steel cases: Boston Bridge Co., $15,000; Carter Bridge Co., $2,000; Groven Bridge Co., $1,500; Oswego Bridge Co., $1,000. These companies, through their attorneys, pleaded guilty to indictments charging them with violating the anti-trust law.

At the July directors' meeting of the Crocker-Wheeler Co., Ampere, N. J., held at the New York office of the company, Dr. Schuyler Skaats Wheeler was continued in office as president, and the following officers were elected for the ensuing year: Vice president, Gano Dunn; second vice president, A. L. Doremus; chief engineer, Gano Dunn; secretary, Rodman Gilder; treasurer, W. L. Brownell; assistant treasurer, G. W. Bower.

The C. O. Bartlett & Snow Co., Cleveland, has recently closed contracts through F. C. Greene, mining engineer, for complete coal mine equipments for the McGillveary Coal & Coke Co., at Coleman, Alberta, and the West Canadian Colliers Co., at Bellevue, Alberta. The contract includes a steel tipple with all the necessary machinery, including the Greene patent transfer dump, type 4, for each plant, as well as a complete power plant equipment and haulage system for both plants. The plants will be entirely electrically operated and are to be in operation by November 1, of this year.

The Canton Boiler & Engineering Co., of Canton, O., has ready for shipment 10 buoys, and 6 in the shop in the course of construction, which they are building for the government for coast work. The company is also building a 100,000-gallon water tank for shipment to Long Island; 150,000-gallon water tank for Fort Assiniboine, Idaho, and doing considerable flue work for use at the Steel Corporation plant at Gary.

Relative to recent incorporation, the Ohio Metal Products Co., Dayton, O., advises that it supersedes the firms of Volta & Muhlenberg, and the Muhlenberg Machine Co., which were not incorporated. The officers of the new corporation are, J. H. Dohner, president; C. E. Muhlenberg, vice president and treasurer; and B. E. Dohner, secretary. The board of directors is composed of the above, and in addition, E. Muhlenberg and S. W. Dohner. The company engages in the manufacture of bench lathes and special automobile parts, and states that it is its intention to manufacture automatic and hand screw machine products in the near future.

The plant and properties of the South Baltimore Steel Car & Foundry Co., located at Curtis Bay, Md., just outside of Baltimore, will be sold at public auction July 29. The plant has a normal capacity of 40 cars per day. It has been operated by Jos. R. Foard, Arthur G. Wellington and Howard Carlton as receivers for a considerable time.

The Carnegie Steel Co. will put the new Slick pressed steel car wheel on the market, and will manufacture it in the shops at Homestead, getting the steel from those mills. The Pittsburg & Lake Erie has been using the wheel nearly two years, and other roads have been testing it with satisfactory results. The company will continue to operate the Schoen Car Wheel plant at McKees Rocks.

The Maryland Steel Co., Sparrows Point, Md., recently received a contract from the A. H. Bull Co., of New York, for a large ocean steamer. The vessel, which will be used as a tramp steamer in the trans-Atlantic post trade, will be 310 feet long, 44 feet beam and have a depth of hold of 26 feet 6 inches. It will have a single screw driven by a travel extension engine, and the company will have it complete in about a year's time.

The Whitney Iron Works, New Orleans, La., has been purchased by Bancroft, Ross & Sinclair, who will operate the plant as well as their own foundry. It is understood that the price paid was about $300,000. The iron works property includes a number of brick buildings fronting 327 feet on St. Joseph street, 244 feet on Constance, 251 feet on Tchoupitoulas streets, and 280 feet on a side line adjoining other properties in the block.

The Ahlm-Zorn Engineering Co., Cleveland, advises respecting its recent incorporation that it is organized to do a strictly engineering business for power plant and general industrial plant construction, as well as for designing electrical and special machinery. It was organized to take care of the increased business of C. E. F. Ahlm, its president. At the present time the company has in charge the construction of the municipal electric lighting plant for the town of Canal Dover, O.

The Garwood Bronze & Iron Works, Garwood, N. J., advises as to its recent incorporation that it intends carrying on a general line of foundry work, making medium and light size castings in gray iron, bronze, brass and aluminum, as well as doing light machining and finishing on ordered castings in electro-nickel and enameling. It has a small building, which will give its equipment more room and operating space, and does not require any new equipment. The officers of the company are: President, W. S. Tuttle, and secretary-treasurer, W. T. Dette.

At the annual meeting of the United Iron Works, Springfield, Mo., held at the Springfield offices of the company, July 3, the officers and directors of the past year were re-elected. They are C. H. Cole, president; H. T. Hornsby, vice president; A. C. Dailey, treasurer; R. P. Bowyer, secretary. J. T. Woodruff, Springfield; B. F. Hobart, New York city; J. R. Woodfield, Aurora. The company has five plants now in operation, one in Aurora, Pittsburg, Joplin, Iola and Independence.

The Slade Tubing Co., of Rome, N. Y., which was recently incorporated, is planning to occupy a plant on East Dominick street, formerly the plant of the Joseph A. Spargo Wire Co. Small sizes of seamless brass and copper tubing will be manufactured. The company was incorporated with a capital of $50,000, and its directors are: Frank Slade, Rome, N. Y.; George F. Slade, Pawtucket, R. I.; Barton Haselton, James A. Spargo and Fred M. Shelley, of Rome. Machinery will be removed from the Pawtucket plant to Rome, and it is expected that the new mill will be ready for operating early in July.

Fires:—

The main building of the Moscow, Pa., branch of the Westinghouse Co., was destroyed by fire July 11. Neither the cause of the fire nor the loss entailed have been definitely determined.

The plant of the Brooks Gasoline Engine Co., Falls View, Ont., was recently destroyed by fire. It was uninsured, and the amount of loss was about $10,000.